THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—21ST YEAR. SYDNEY, SATURDAY, OCTOBER 6, 1934. No. 14.

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The Jackson Lecture.[1]

THE ANCIENT ROMANS THROUGH MEDICAL EYES.

By ERIC JEFFREY, M.A. (Tasmania), M.B., Ch.M. (Sydney),
Hobart.

THERE is a Latin proverb to the effect that every man does not have the luck to go to Corinth. Equally true is it in these modern days that it does not fall to the lot of every medical man to write a Jackson lecture. I must begin, therefore, by expressing to you my deep appreciation of the compliment you have paid me by inviting me to write this year's lecture. Whether, before the evening is over, you will find cause to regret your rash action I know not. But the assurance that I have diligently studied deserving should enable you at least to sit down to your dinner of historical herbs with charity and goodwill.

[1] Delivered at Brisbane on September 7, 1934.

It is peculiarly appropriate that the lecture that you have established in honour of Dr. Ernest Sandford Jackson should be one on some aspect of medical history. For not only is Dr. Jackson deeply interested in that branch of study, but, when the medical history of Australia, and particularly of Queensland, comes to be written, no name will find a more distinguished place in it than his own. The making of history seems to be a habit with members of Dr. Jackson's family, for two of his great-uncles played an important part in the early settlement of Port Phillip. This is not the place to speak of his many services to his adopted State and to his profession, but he would have amply earned the lasting gratitude of both if he had done no more than establish the Brisbane Hospital Training School for Nurses, the first of its kind in Australia, and help to found this Branch of the British Medical Association.

Turning now to the subject of my lecture, I must first state that my survey has been limited to the period that elapsed between the foundation of Rome

and the arrival of Galen on the medical scene. Him I have hardly mentioned, partly because he stands at the beginning of a new epoch of medicine, and partly because his scientific outlook was distinctly un-Roman. Since most of my information has been derived directly or indirectly from authors who wrote, roughly, between the years 225 B.C. and A.D. 130, much of what I have to say about Rome and its affairs will apply to some time between those dates, although I shall not always bother you with the exact period to which each statement refers.

For the medical historian the story of Rome opens most auspiciously. At the very outset we find in progress a physiological experiment which definitely proved that human infants can survive and thrive on an exclusive diet of wolf's milk. When the wolf's foster children, whom, of course, you will have recognized as Romulus and Remus, grew to manhood, they discovered that their mother was a virgin princess and their father the god Mars. This fact, together with their manly spirit and proved capacity for leadership, determined them not to await the decease at Alba of their royal grandfather, whose sole heirs they were, but to build a city of their own close to the spot where the wolf had succoured them in their infancy. Unfortunately they were twins and, as there was no pathologist at hand sufficiently skilled to decide which of them had been born first, a quarrel arose as to who should be the ruler of the new city. Romulus settled the question by choosing a site on the Palatine hill and commencing building operations on April 21, 753 B.C. The growing wall soon presented itself to Remus as an excellent apparatus wherewith to test the efficiency and coordination of his nervous and muscular systems. The experiment, as you know, took the form of a jump, and its disastrous outcome should have suggested to Romulus the urgent necessity of including in his metropolis an up-to-date hospital with a well equipped operating theatre. Romulus soon discovered that his city contained too few inhabitants to defend it properly, and in order to increase their numbers he established on the adjacent Capitoline hill an "asylum" or sanctuary for men who were fugitives from the laws of other cities or from the vengeance of private enemies. From this refuge for outcasts later ages took the name which for many years was applied to hospitals for the insane and which is only now being abandoned. To his small communty Romulus gave laws, to some of which we shall have occasion to refer later.

But, alas, all these things are composed of the unsubstantial fabric of myth, and the yellow Tiber is destined to swirl for centuries beneath her bridges before the twilight of history brightens into clear day.

For a long time after the expulsion of the Tarquins in 509 B.C. the legislative and executive powers of the Roman State had been possessed almost entirely by the patricians, who formed a kind of hereditary aristocracy. From this class alone the chief magistrates, the consuls, could be elected. Their power over the people was all the greater because most of the laws they administered were merely traditional customs and not written statutes. The secret of these customs was jealously guarded by the patricians, with the result that the plebs never knew whether the magistrates were acting legally or illegally in any given exercise of power. The natural political and social disadvantages of the plebs were so greatly increased by this ignorance that by degrees a demand arose that the laws of the State should be reduced to writing so that all might know what the statutes were that they were expected to obey and that they might also with this knowledge keep some check on the tyranny of their rulers. By 453 B.C. this demand became so irresistible that in that year ten commissioners, the decemvirs, were appointed to carry out the reform. Two years later they produced the famous Ten Tables, the first written code of Roman law. Among the fragments of these that have come down to us there is one that at first sight appears to be of distinct surgical interest. It provides that if a bankrupt debtor has several creditors they may cut him up, and that no penalty shall attach to any creditor who cuts off more or less than his fair share. We at once remember that most of the legal systems of Europe are based upon Roman law and that a shrewd man like Shylock was certain to know all the quiddities and quillets of the law relating to his trade. Why then, we ask, did he not quote this statute as a completely effective ground of appeal against Portia's most unjust and illegal judgement in his suit? The answer lies in the fact that modern scholars have pointed out that the Romans were not fools, but very practical business men. The meaning of the statute, therefore, was that the operation was to be performed upon the debtor's goods and not upon his person, since the dismemberment of the latter would be in no way profitable to his creditors, whereas its preservation intact and its sale as a slave, as another section of the statute permitted, would at least to some extent recoup them for the money they had lent.

More than two centuries have still to pass before we reach the introduction to Italy of the kind of medicine that was practised in classical times. From the earliest period until the first contacts with Greek medicine the methods used by the Romans to combat sickness were the same as those universally found among primitive peoples. Disease was regarded as a punishment by the angry gods, and pain was thought to be caused by invisible darts that they had implanted in the offender's body. The logical result of these beliefs was that relief from sickness and suffering was sought by prayers, processions and sacrifices, to which were added the use of charms and incantations and other magical practices derived from folklore. Both benevolent and malevolent deities were believed to concern themselves with health and disease. Among the former were Mars, the averter of pestilences, and Salus, the giver of health. Examples of the latter were Febris, who caused fevers, and Dea Scabies, who plagued men with the itch.

Since the priests were the best interpreters of the will of the gods, and the most skilled in placating them, the practice of medicine fell largely into their hands. Sick persons also sometimes slept in the temples so that the gods might inform them in dreams of the steps to be taken to regain health. If no satisfactory dream was vouchsafed, the priests did not hesitate to impersonate the god in the darkness of the temple and give the necessary instructions. This monopoly of treatment was, of course, highly profitable to the priestly class and they jealously resented any infringement of it. Nay, more, they frequently threatened the people with pestilences if the offerings in their temples showed any signs of falling off. Under this theurgic *régime* there was little opportunity for the development of a scientific medicine, and therefore the early days of the Republic produced no distinguished physicians. But side by side with this priestly medicine a simple domestic medicine and crude surgery was practised by the heads of families upon the members of their households, and collections were made of lists of remedies which experience had shown to be effective. Cato the Censor (died 149 B.C.), who wrote the earliest extant Latin prose work, has left us such a list. He regarded cabbage as a panacea, in the same spirit as Bishop Berkeley did his tar water, and in his treatment of dislocations he combined the use of splints with an incantation which seems to consist of a meaningless jumble of syllables. Similar lists were collected for use in the treatment of diseases of the domestic animals. Intelligent slaves, male and female, called *medici* and *medicæ*, were also trained in this homely craft and employed as domestic medical attendants. In addition, there were professional *medici* whose services were available to the public at large. In view of the later influence of Greek medicine, it is of interest to note that the Latin word for a physician, *medicus*, is of early Roman and not Greek origin. Celsus, writing about A.D. 30, pointed out that the physicians in Homer treated wounds only. He makes the interesting suggestion that, in the days when no medical aid was available for disease, men had little need of physicians, since their bodies were not so corrupted by idleness and luxury as were those of his contemporaries.

The Romans followed the Greeks in regarding Phœbus Apollo, the physician of the gods, as the inventor of medicine. By the nymph Coronis, who seems to have indiscreetly joined the god while he was bathing in a river, Apollo had a son, Æsculapius. He entrusted the education of the boy to the centaur Chiron, who taught his charge the art of medicine. Arrived at manhood, Æsculapius performed many miracles of healing, but his very efficiency proved his undoing. It happened in this way. The seer Polyidus, while watching by the body of the dead Glaucus, saw a snake approaching and promptly killed it. In a few moments, however, he observed a second snake, which drew near its dead companion and touched the lifeless body with a herb that it carried in its mouth. At the touch the dead snake instantly revived. Polyidus communicated his discovery to Æsculapius, who used the same herb to restore the life of Hippolytus, whose death had been brought about by his incestuous stepmother Phædra, the the Greek counterpart of Potiphar's wife. Jupiter, incensed that a mortal should usurp the divine prerogative of raising the dead, blasted Æsculapius with a thunderbolt. After his deification a temple was erected for the worship of Æsculapius at his birthplace, Epidaurus, a town in the Peloponnesus, about thirty miles from Athens, where many of his cures had been effected. This temple became a famous centre of priestly medical treatment. In the district around the temple were found large, yellow, non-venomous snakes, and some of these were caught and trained to lick the wounds of temple patients with their forked tongues, which were credited with possessing remarkable healing powers.

In the year 293 B.C. Rome was visited by a severe pestilence. All attempts to placate the gods failed and in desperation the Sibylline books were consulted. They directed that aid should be sought from Apollo at his shrine at Delphi. This was done, but the god, following the best traditions of medical etiquette, pointed out that he was a specialist in the diseases of gods and that the proper person to consult was his son Æsculapius, the god of physicians, who treated human diseases at Epidaurus. Through his priests Æsculapius directed the ambassadors to erect a temple to himself at Rome and gave them one of the temple snakes to confer added sanctity on the new shrine. The sacred serpent was landed on an island in the Tiber and there a temple was erected in accordance with the god's orders. The subsequent speedy abatement of the pestilence made the worship of Æsculapius very popular at Rome and the island temple was soon thronged with sufferers seeking relief.

You will observe how prominent serpents were in the cult of Æsculapius, and you will remember that his staff is always represented as entwined by a snake. The original connexion of serpents with the healing art was probably forgotten by the ancients, who constructed myths to explain it, but it probably arose early in the Minoan civilization, which preceded that of classical Greece in the eastern Mediterranean, since the serpent was an important religious emblem among the Minoans. So many references to snakes are made by Latin writers that you will excues me if I digress a little to speak of one or two of them. Lucan (died A.D. 65) gives a startling account of the African snakes and of the symptoms produced by their bites. We begin to have doubts, however, of his scientific accuracy, when he gravely informs us of an African tribe of snake-charmers who enjoyed a racial immunity against snake-bite so complete that it was employed as a test of legitimacy. If a woman married to a fellow tribesman was suspected, he says, of bearing a child to a stranger, the infant was exposed to the bite of a snake, and its subsequent freedom from symptoms proved its mother's chastity. It is unfortunate that we possess no

statistics of the tribe's infant mortality rate. Among other tribes it was the practice to amputate immediately the bitten part of the limb. We learn from Celsus that the ancient physicians were not in agreement about the specific treatment of the bites of different kinds of snakes, but they all agreed that a ligature should be placed above the bite and that after an incision had been made around the wound the poisoned blood should be extracted by cupping. Immediate treatment was essential, and if apparatus for cupping was not available the wound should be sucked. Since swallowed venom was harmless, this could be done quite safely if the operator had no abrasions about his mouth. It is remarkable that it is only during the last few years that we have found a more efficient method of treatment than the ones described. Celsus also tells us that the venom of a hungry snake is more deadly than that of one that has recently fed. In regard to this point I may remind you that Dr. Kellaway, of Melbourne, recently reported that he had starved spiders for three days in the hope of making their venom more toxic. Snake-bite, we are also informed, is particulary dangerous to hungry persons. The obvious conclusion from this, of course, is that we should take care to be bitten only immediately after meals. According to Celsus the drug treatment of snake-bite varied with the attacking snake, but vinegar was particularly efficacious in asp-bite. For scorpion-bites he recommends powdered scorpion in wine, a kind of hair-of-the-dog-that-bit-you treatment. But snakes also had their therapeutic uses, for Celsus informs us that although physicians had various treatments for tuberculous glands, which they found very difficult to cure, yet certain rustics had discovered by experience that if a scrofulous patient ate a snake the disease left him. In later days viper's flesh was an important ingredient in the famous antidote theriaca, which contained sixty-four substances, and from which our word "treacle" is derived. We learn from Celsus that the Gauls used snake venom wherewith to poison their hunting spears, and Ovid (died A.D. 18) asserts that the Getæ, a Balkan tribe, treated in the same manner the arrows that they used in war. Silius (born A.D. 25) confirms Ovid's statement and adds that during his invasion of Italy Hannibal adopted the practice of the Getæ.

In 228 B.C. the Romans subdued and concluded a treaty with Queen Teuta of Illyria, a country on the east of the Adriatic, who had been guilty of acts of grave hostility against them. They had been aided in the war against her by the Greek Ætolian and Achæan leagues, and to these they now sent ambassadors to acquaint them with the terms of the treaty. This was the first occasion on which Rome had had official dealings with Greece, and it was an occasion fraught with tremendous consequences for both countries. Then were sown the seeds of a friendship which made many Romans regard themselves as the chivalrous protectors of Greece, although that protection was often to show itself in strange forms. But three years later Philip V of Macedon, who had established a kind of suzerainty over Greece and who was beginning to fancy that the mantle of Alexander the Great had fallen upon him, was emboldened by the Roman disasters at Lake Thrasymene and Cannæ in the two preceding years to ally himself openly with Hannibal, with whom the Romans were then engaged in a life and death struggle in Italy. The Romans had previously learned of Philip's designs against them, but now, despite their desperate situation, they thought it necessary to declare war against him, and shortly afterwards they sent an expeditionary force to Greece. The campaign thus begun against Macedon was followed by others, until by 168 B.C. not only Macedon but the whole of Greece had become subject to Rome.

But although Greece was thus reduced to the status of a conquered country she took a complete intellectual revenge. As Horace (died 8 B.C.) says: "When Greece was enslaved she made a slave of her rough conqueror, and introduced the arts to Latium which still had little culture." Greek scientists, artists and men of all trades and professions flocked to Rome as the centre of wealth and patronage. By the time of Juvenal (died about A.D. 130) this influx from all parts of the Grecian world had become so great that he bitterly complained that he could not abide a Greecized Rome. Syrian Orontes had long been rolling his flood into Tiber and had brought with him his language and his morals. The native-born Roman, Juvenal said, donned his Greek boots and wore a Greek collar upon a neck rubbed with Greek ointment. There was no occupation at Rome for her own citizens, since the starveling Greeks were critics, rhetoricians, geometers, painters, trainers, prophets, rope-dancers, doctors and sorcerers—masters of all trades in fact.

Until this Greek immigration took place the character of the Roman people had developed its own native qualities almost unaffected by outside influences. These qualities were indeed admirable ones. They included great ability to make laws and great respect for them when made. As a corollary to these the Romans displayed a genius for organization which enabled them subsequently to build and hold a mighty empire. In the moral sphere they manifested a gravity and solidity of character and a strong sense of national and personal discipline. They were an essentially practical people and as such never produced a distinctly national school in any of the fine arts. In literature their best poets were largely talented imitators. Horace urges Roman writers to study Greek models night and day, and there is little doubt that even the Æneid owes its origin to Vergil's study of Homer. In science—but here let me quote Professor Tucker:

> Science, though its matter was attractive enough to the practical Romans, was at a standstill. So far as it existed it was Greek. The Greeks had done almost all that could be done by sheer brain-power and acumen. They could hardly proceed further without those finer instruments which we possess but which they did not. Where they stopped short was at experiment in test of hypothesis.

And again:

> All we know is that, while the best of literature, science, art and philosophy was left to be undertaken by the Greeks, the Romans seized upon whatever learning had an appreciable practical bearing, and that, as men capable of administering and directing, they left their intellectual and artistic superiors far behind.

As an example of the extremely practical nature of the Roman outlook we may note that Celsus, in his chapter on fevers, does not mention the association of enlargement of the spleen with fevers—this, of course, did not interest him—but in his chapter on diseases of the spleen he gives directions for the treatment of enlarged spleens. I need say no more to explain why the period we are discussing never produced a Roman medical scientist of even moderate distinction.

It is not my purpose, however, to discuss Greek medicine, which underwent few changes in Rome during our period. I wish therefore merely to touch very briefly on three Greek doctors who are of particular interest. Archagathus of Sparta, who crossed over in 219 B.C., was the first Greek medical man of note to visit Rome. He was favourably received and the boldness and success of his surgery at first won the admiration of the citizens. Later, however, the severity of his operations produced a revulsion of feeling and earned him the nickname of "the executioner" and created a prejudice against Greek practitioners which lasted for a considerable time. The first eminent physician at Rome was the eloquent and cultured Asclepiades of Bithynia, who arrived about 100 B.C. and became one of the greatest physicians of antiquity. He earned the support of all classes by cleverly combining the atomic theory of the Epicureans with the practical maxims of the Stoics. He taught that the aim of treatment should be to heal quickly, safely and pleasantly. He rejected the Hippocratic doctrines of humours and of a morbid material that should be eliminated by Nature or art, and therefore he avoided the violent treatment by emetics and purges that those doctrines demanded. He healed chiefly by regulating the diet and by methods of physical therapy, such as exercise, massage and cold baths. He had little faith in drugs, but his liberal use of wine as a remedy made his treatment, as Pliny (died A.D. 79) says, very popular with the natural man. Meges, who supervised the reduction of his own dislocated knee, is described by Celsus as the most learned surgeon of the author's day.

Let us now take a closer look at Rome itself and its inhabitants so that we may hazard a few conjectures regarding the influence of their environment on the health and disease of the citizens. In the first century of the present era Rome contained roughly a million souls. It was a city of great contrasts. The slopes of its seven hills were covered with the palaces and gardens of the rich. The most magnificent of these was Nero's (died A.D. 68) Golden House on the Palatine and Esquiline, which, with its grounds, covered a square mile and which the Emperor himself admitted, even while it was still uncompleted, to be a residence fit for a man to live in. On the lower levels were crowded the *insulæ*, blocks of flats or apartments, separated by lanes, that housed the poorer classes. The narrowness of some of these lanes is illustrated by Martial's mention (about A.D. 100) of a man who, standing at his window, could shake hands with his neighbour in the flat opposite. An *insula* excavated a few years ago showed that these apartment houses sometimes contained seven stories and, indeed, Augustus (died A.D. 14) published a law limiting the height of buildings at Rome to eighty feet. The houses were generally built of concrete or of blocks of stone set in mortar and clamped together with metal bars. Wood seems to have been little used in their constructions, even the floors being of concrete. This widespread use of concrete provides one of the puzzles that baffle antiquarians, namely, the explanation of the disastrous fires that were so common at Rome. Juvenal complains that he must live in some place where fires and the night alarms they cause are unknown. The ground floors of many of the buildings often contained booths or shops opening on the street and walled off from the rest of the house. Some of these shops were occupied by doctors as surgeries where patients sought advice or the drugs which even the most exclusive physicians dispensed and sold. There was no out-patient hospital problem in those days, and the throng of patients in these surgeries is hinted at by the poet's suggestion that they were good places in which to look for a man. These various shops may have contained a good deal of wooden furniture, and the narrowness of the streets would have aided the spread of fires, but these facts do not seem sufficient to account for the extent and frequency of the latter.

Besides the casualties produced by fires, a great deal of work was provided for the surgeons by the incessant collapsing of the houses. To quote Juvenal again:

> We live in a city that rests, a great part of it, upon a slender prop, for thus the house-agent prevents the buildings from falling, and, when he has covered an old gaping crack, he bids us sleep in peace—and a collapse imminent.

Pliny states that the Romans used too little lime in their concrete. This, of course, would give the buildings poor foundations, and these were further weakened by the periodical inundations of the Tiber. Moreover, Vitruvius (about 50 B.C.) informs us that the builders of his time, being in a hurry, built hollow walls of stone and filled the space between them with dry rubble that did not bind the walls together. The same practice, you will remember, was followed in building the piers in Saint Paul's Cathedral, which have recently been grouted with cement. In arbitration cases the life of a reasonably well-built Roman party wall was taken as being only eighty years.

The roofs of the houses were flat or sloping, and in the latter case were usually covered with metal or concrete tiles. No provision seems to have been made for carrying off the rain water, which poured in torrents down the centre of the streets. Stepping-

stones were sometimes provided so that pedestrians might go more or less dry shod. Rubbish and dirty water were often thrown into the streets and the scavenging was not always very efficient. Thus Rome, with its narrow lanes and dirty streets, must have provided conditions very similar to those in London before the fire, and have been ripe for an explosive outbreak of plague, if that disease had not refrained from visiting Europe until the reign of Justinian, some centuries after our period.

The main streets of Rome were probably not as a rule more than twenty feet wide, and they were still further narrowed in the day time by the benches that were placed outside the shops for the display of goods. They were filled with a motley throng of men and women on foot and in litters, and noisy with the salutations of friends, the heated discussions of the contents of the daily gazette that was first published by Julius Cæsar, the cries of hucksters and the chanting of school children reciting their lessons in open balconies. The press of persons was so great that wheeled traffic was prohibited in the city until the early hours of the morning. At night the streets were unlighted and resounded with the songs of revellers, the clamour of gangs of larrikins and screams of their victims, and the noise incidental to the passage of heavy vehicles laden with building materials, so that complaints were frequent of the inability of ordinary persons to obtain undisturbed sleep in the city. This indeed Juvenal describes as a luxury of the wealthy. Well might Horace write of "the smoke, the splendour and the din of wealthy Rome". But all this state of affairs, with its noise and alarms and consequent loss of sleep, would seem to have been very favourable for the production of anxiety neuroses, which, if one unskilled in psychology may be permitted a wild guess, may have partly contributed to the Roman delight in the sufferings of others in the amphitheatres.

Many of the houses were centrally heated by hot air pipes under the floors or in the walls. There seems to be some uncertainty as to whether chimneys were in common use under the early Empire, since kitchen fireplaces with short flues alone have been found at Pompeii. In any case, the main reception room often received additional heat from portable charcoal stoves, the smoke from which escaped through an opening in the roof. The floor beneath this opening contained a pool, the impluvium, which received any rain water that might enter through the aperture above it. The art of glass making was well understood in classical times. The windows that fronted on the street were small and placed high up on the walls; those opening on the garden from the sun porch were much larger. Glass-paned doors also increased the amount of natural light received by the inner rooms.

The city's daily supply of water has been estimated at 38,000,000 gallons, that is, about thirty-eight gallons per inhabitant. This was conveyed by about a dozen aqueducts, some of which were as much as sixty-two miles long and ran partly underground. The use by the Romans of aqueducts rather than pipes has been ascribed to their ignorance of the fact that water in pipes tends to rise approximately to the level of its source. This is, of course, a base libel. The real reason was that they were unable to construct satisfactory cast-iron pipes. Another reason was that much of the water was highly calcareous and rapidly formed incrustations in its conduits. These would speedily have blocked lengthy pipes, whereas aqueducts could more easily be freed from them. Arrived at the city the water was conveyed to 700 public basins and 300 fountains, from which it was distributed to many of the houses by pipes of lead, wood or bronze, its flow being regulated by taps or plugs. The poorer classes, however, generally obtained their supply from the public basins in jars which were carried on the heads of slaves or women.

In view of your interest in chronic plumbism and the widespread employment of lead by the Romans, I have made a special search for evidence of disease arising from the use of the metal. But two statements by Vitruvius are all that I have been able to find on the subject. One of them is that leaden water pipes give rise to the formation of white lead, which is said to be injurious to health; and the other that workers in lead are yellow. Here he is doubtless referring to the anæmia of olive-skinned patients with chronic nephritis. I add a few of the common uses to which lead was put in those days. As powdered white lead it found a place as a cosmetic. Remembering that the encephalopathy of infants that has been common in Japan for centuries has been now shown to be due to the absorption of white lead applied as a toilet powder to the babies' skins or their mothers' breasts, we may wonder whether Roman infants suffered in this way to any extent. Red lead was used for drawing lines in manuscripts. One would think that this might easily adhere to the fingers of scribes or readers and be ingested. Celsus advises the use of "washed lead" (whatever that is) with wine as an inunction. He also recommends leaden tubes for draining the bladder after perineal lithotomy and the filling of hollow teeth with lead to prevent their crumbling under the forceps during extraction.

Rome was famous in very early times for its extensive systems of sewers. These were said to have been introduced during the reign of the Etruscan Tarquinius Priscus, who died in 578 B.C. This probably means that Rome learned the art of constructing them from Etruria. They were so well made that the best known of them, though not the largest, the *cloaca maxima*, is still in use. It consists of three concentric tiers of arches and has an internal diameter of fourteen feet. The sewers were first built to carry off stagnant water from the low-lying parts of the city, but the additional functions they acquired in later times are less clear. As Rome has been continuously inhabited since the classical period, we have to study abandoned cities like Pompeii for our evidence on such matters. Here

it would seem that many of the houses were connected with the public sewers. But as a rule only the dirty water and kitchen slops were carried off by the drains, since most of the latrines were merely cesspits with no outlets, although occasionally one was furnished with a flushing inlet and an outlet to the sewer. Perhaps this latter practice was more common at Rome, since Juvenal speaks with disparagement of the Tiber pike that had often explored the drains of Subura before it was contemptuously served by the rich snob to his poor guest. The sewers did not carry off the rain water which, as we have already stated, ran in streams down the middle of the streets until it reached places where it found its way into large underground channels specially constructed to receive it.

It seems strange that the sanitary arrangements of the practical Romans were so primitive when we remember how "staggeringly modern", to use the words of Sir Arthur Evans, their discoverer, were those employed at Knossos in Crete in the fourteenth century B.C. Here were found on several floors of the king's palace indoor water-closets, with proper flushing systems connected to the main sewers, that have earned the amazed admiration of modern sanitary engineers. At Rome, however, matters were made worse by the almost universal practice of constructing the cesspit latrine at the very door of the kitchen and in close proximity to the bakehouse and flour-mill. Many Roman customs have survived in Spain, but in this matter the Spaniards have improved on their masters' teachings, for a friend who recently visited that country tells me that he saw there the sanitary pan placed actually in the kitchen beside the stove, where its covering served as a kitchen seat. Owing to the use of high-smelling herbs and unspeakable sauces, Roman kitchens stank abominably, as we may infer from one writer's statement that: "The rhetorician pupils can no more have good sense than those who live in the kitchen can have a keen sense of smell." The natural result was that such kitchens were full of flies; indeed, we were told that the hangers-on of the rich amused themselves by chasing the flies in their masters' kitchens. This conjunction of food, flies and privies prepares us for the stress laid by Celsus on the prevalence of dysentery and quotidian fevers at Rome. From his description some of the latter may well have been caused by the enteric group of diseases. Other possible sources of similar infections were the public urinals. These consisted essentially of large jars, the contents of which were sold by the prudent and frugal Vespasian (died A.D. 79) to laundrymen for use in their business. This employment of urine in place of washing soda was, of course, common right through the middle ages and has been adopted even in modern times when soda was not available.

The staple food of the earliest Romans was puls, a kind of gruel made from the whitest grain. Later the chief article of diet of the common people was unleavened bread cooked in a kind of camp oven, something very like the Australian damper in fact. First-class bread was made from wheat flour carefully refined. Second-class bread was composed of barley flour and contained a good deal of bran. But even very poor persons often sifted the bran from their flour. In the reign of Augustus 200,000 citizens received a dole of one and a quarter bushels of grain (presumably wheat) every week. Other necessaries were salt, obtained from the salt marshes near the mouth of the Tiber, olive oil, a sauce called hallex, and vinegar. The ration prescribed by Cato for a slave, and possibly issued every two days, was four pounds of bread till it was time to dig in the vineyard; then it was increased to five pounds until the figs came in, when it returned to four pounds again. Pickled onions were given as a relish until the supply was exhausted, when they were replaced by hallex and vinegar. Under the early Empire a soldier's ration consisted of vinegar, bacon, cheese, and grain; the last mentioned he was expected to grind and make into bread or biscuit himself. Cheese, olives, legumes, especially chickpeas, and green vegetables were also eaten to a certain extent by the citizens, but the greens were generally boiled in soda to improve their colour—a vitamin-destroying practice that is still popular with modern cooks. Milk was little used, which may have reduced the amount of tuberculosis and Malta fever in the city, and butter, like sugar, which was replaced by honey, was employed only as a medicine. School children seem to have been sometimes given a kind of suet dumpling for breakfast. Most Romans ate once or at most twice a day. Meat was very sparingly used, although a certain amount was occasionally obtained by the poorest persons from the animals sacrificed in the temples. It played such a small part, however, in the ordinary person's diet that on more than one occasion Cæsar was able to speak of his men as eating sheep and cattle as a last resort against famine when their supply of corn was exhausted.

No doubt even the poorer classes sometimes obtained some of the fruit, flesh, fish and shellfish that were at the disposal of the rich, but on the whole their diet appears to have been much as I have described.

Now such a diet seems to me to be seriously inadequate. It contains very little first class protein; it is deficient in animal fats and their associated vitamins, and it also lacks adequate amounts of mineral salts, particularly phosphorus, calcium and iron. An imbalance of calcium and phosphorus intake would also be brought about by the large amount of lime in the drinking water. The fashion of the Roman dress would also limit the autoproduction of vitamin *D* under the Mediterranean sun. We are therefore not surprised to find in Juvenal frequent references to persons with knock-knees, bandy legs, pot bellies and other signs of rickets. The same reasons, together with the large consumption of cereals, would, if Mrs. Mellanby's theory is correct, account for the amount of dental decay suffered by the Romans. Some of the diseases that provided so much work for the

Roman oculists may have been examples of xerophthalmia due to vitamin *A* deficiency. Vitamin lack might also have been responsible for some of the urinary calculi that were so common at Rome. McCarrison's work would, moreover, suggest that such a diet would also have been productive of goitre on a large scale. The excess of lime in the water would have had the same tendency, though this effect would be partly counteracted by the deficiency of animal fat in the diet. Since, however, Juvenal says that no one is surprised at goitres in dwellers in the Alps, we must infer that thyreoid enlargement was not common at Rome. Apparently even Cato's admired cabbages were not goitrogenic. Perhaps the large amount of coarse salt that was consumed contained sufficient iodine to prevent goitre or, more probably, the Roman mob may have obtained a good deal of the element, together with animal protein, by consuming more fish and shellfish than we suspect. Some of the dwarfs that were so highly prized by the Roman ladies were undoubtedly cretins, and their condition may have resulted from their mothers' diet. The Æquicoli, a tribe living among the mountains not far from Rome, attributed their endemic goitre to their drinking water.

Mention of the thyreoid moves me to digress a moment to say that the Romans were vaguely aware of a connexion between that gland and the sexual functions, and on this they based a test for female chastity. On her wedding morning a bride's neck was measured with a piece of string that was cut to the neck's exact circumference. Unless the string was found to be too short to encircle the neck on remeasurement the next morning, the girl was thought to be still intact or to have been deflowered before her marriage. The measurement was carried out by the girl's nurse, and we may doubt its universal accuracy in the later days of lowered moral standards, when we remember how Juliet's nurse, also an Italian, connived at her charge's unconventional behaviour. Moreover, after Roman matrons largely ceased to breast-feed their own infants and handed over that function to wet nurses, who afterwards often attended the girls for the rest of their lives, such nurses would have been quite unlikely to betray their young mistresses, even if it had not been impolitic to do so. The duties of a wet nurse, according to Celsus, were often far from light, for in the treatment he prescribes for aphthous stomatitis in infants he orders that the nurse should be made to take vigorous exercise, should be placed in a warm bath and there bidden to lave her breasts, and that she should be given a purge and an emetic. However, these labours may merely have increased her love for the infant.

The Romans believed that the fortunes of the city were intimately connected with the chastity of the Vestal virgins and any breach of this was punished by the offender's death. In an attempt to make the mode of execution an effective deterrent to other Vestals of that or future times, the authorities chose the apparently terrible method of immuring the transgressor with a little food and a lamp in a specially prepared underground cell, the entrance to which was immediately blocked up with earth. But I imagine that they defeated their own purpose, as far as the physical sufferings of the victim were concerned. The carbon dioxide produced by the girl and the lamp would in all probability have been absorbed by the fresh mortar used in the construction of the walls of the cell, and, a very short time after the entrance had been filled in, the girl would, without warning, suddenly and painlessly have become unconscious and shortly afterwards died from pure oxygen want.

To return now to the Roman diet. In spite of its apparent deficiencies we must remember the feats of the Roman legions while receiving it, and that the Roman soldier's training included a twenty-mile march every month in full armour; and a modern traveller has placed on record his amazement at the amount of work done without fatigue day after day by a Greek muleteer on a diet of nothing but bread and olives.

But although it may have supplied a good deal of energy, the Roman diet may not have been adequate for proper growth, and this may partly explain why the Gauls had reason to think Cæsar's soldiers "such little men". We are informed that recruiting officers liked to get men of five feet eight inches in height for the crack regiments, but we do not know that they often got them, and the average Roman legionary probably did not exceed five feet three inches in height.

Although many wealthy Romans were frugal in their habits, Roman banquets are proverbial for their magnificence. But when we examine in detail the fare provided at them we agree with the modern writer who said that some of the dishes had such singular ingredients that no human beings but only flies could possibly be attracted by them. Although the epicures had available to them all the kinds of flesh, fruits and vegetables that are common in Europe today, yet they included in their menus all kinds of impossible things, from dormice to storks. Of course, dishes like squid and ostrich, which cannot be swallowed after months of chewing, may have had the sedative effect nowadays attributed to chewing gum, or may have afforded valuable exercise for the jaw muscles of the numerous Roman barristers. But some of the articles of diet, such as flamingos' brains and the tongues of singing birds, were valued from a senseless and arrogant desire for display, merely because they were rare and costly; and almost all, even fruit and vegetables at times, were served smothered in garum or hallex. Now Pliny says that the intestines of fish and other parts that should have been thrown away were steeped in brine and that the liquid that flowed from the putrefying mass was garum. No wonder Martial spoke of "stinking garum". Hallex was the sediment of garum, but was also specially made from anchovies. Professor Dunbabin suggests that these powerful stimulants of appetite and digestion were employed for the same reason that curry is in

India, namely, that the food would be too insipid without it. He says that hardly a fish in the Mediterannean is worth eating, that the meat on the Continent is lean, tough and stringy, and that the vegetables are gathered while immature and flavourless. Of course, once the palate had been vitiated by garum and the like all sorts of experiments might be tried in an attempt to find something really tasty. Apicius, the author of a text book of cookery, or rather, food murder, after one of his most infamous efforts, remarks complacently that: "No one will know what he is eating"; after another: "You will be surprised". We may well believe him. The rich therefore ran no risk of incurring deficiency diseases, but the effect of such dishes as roast pork and garum on Alvarez's intestinal gradient I leave to the physicians among you to conjecture. Since, however, the rich were the chief perpetrators of such gastronomic crimes, we may all hope that Juvenal was justified in describing as a rich man's disease the gout that was so common at Rome. Many of those stricken with apoplexy may also have been wealthy gluttons whose excesses imposed too great a burden on their vascular systems. After reading of this orgy of spices and sauces we have a fuller appreciation of Horace's poem, in which he complains that garlic can be withstood only by the indurated intestines of agricultural labourers.

Wine was the only common drink at Rome besides water. Its alcoholic content was probably not very high, since it was never fortified. Moreover, it was almost always taken diluted with at least its own volume of water. To drink a stronger mixture was considered blameworthy and the consumption of neat wine was regarded as the mark of a drunkard. It is of interest to note that the custom of wearing garlands of flowers at banquets had its origin in the belief that they had power to allay the heating and intoxicating effects of wine.

This apparent moderation in the use of wine would seem to make it unlikely that much of the dropsy to which Latin writers so often refer was due to cirrhosis of the liver associated with alcoholism. Some of it may have been nutritional œdema or a sign of beri-beri. But this also appears improbable, since Horace implies that exercise was generally prescribed in its treatment. Our suspicions are again, however, directed towards alcohol by an inscription which records that: "Baths, wine and women ruin our constitutions." I do not know the date of the inscription, but there were times when the mention of the last two vices would have been superfluous, since the first would have included all three. Drinking by women was severely frowned upon and the right that all her male relations had of kissing a married woman is said to have arisen as a means of discovering whether she had been drinking or not. A life-like figure, in one of the Italian museums, of a drunken old woman shows, however, that at least some of the Roman dames defied public opinion in this matter.

The baths that we have just mentioned were, of course, the public and private thermæ that were visited daily by a very large number of the citizens. They were a combination of bath, club, restaurant and gymnasium. Here poets, politicians, philosophers and others met to exchange ideas. But the chief interest the baths have for us lies in the ball and other games indulged in by those who frequented them. These kept in good physical condition many of the Romans who took little other exercise and who, for example, saved themselves the trouble of walking by travelling about the city in litters. The baths themselves, with their cold and hot waters and hot air compartments, and the massage that their clients underwent before and after bathing may have had a similar result, although in excess they may have been enervating. Even elderly men took their daily exercise, which it was considered disgraceful to neglect. Women had their own baths, but gymnastics were thought to be unbecoming to them. Mixed bathing was generally forbidden by law and custom. But occasionally these prohibitions were relaxed and then the baths became the scenes of the grossest immorality.

For the spa treatment of disease crowds of patients sought the gaiety and warm sulphur baths of beautiful Baiae. These aids to health, however, fell temporarily into disfavour when Antonius Musa's successful cold water treatment of Augustus's arthritis made popular the cold springs of Gabii and Clusium. But the death of Marcellus, the Emperor's deeply loved nephew, under the same treatment possibly restored some of its patrons to Baiae.

Sir Maurice Craig and others have shown the harmful effect on school children of excessive mental and physical stimulation. Roman children seem to have been very subject to both of these. After a night possibly disturbed by the ordinary city noises or more serious alarms the child had to be at school before cock-crow. Most of the masters we have record of were very bad-tempered. Horace has immortalized his teacher Orbilius by christening him "the flogger". Even the Greek Menander (died 291 B.C.) says that "he who is not flayed is not educated". Athenæus (about A.D. 230) is unnecessarily offensive when he remarks: "The only greater fools than doctors are teachers." The inscriptions on the ruins of a school on the Palatine for court pages show that the youngsters were delighted when their school days were over, and it may not have been hard work alone that brought about the regrettable death at the age of eleven and a half years of Gaius Sulpicius Maximus, who is recorded as having succumbed to his successful effort to win a prize for a set of Greek verses.

Singer, in his "Short History of Medicine", says that the whole idea of infectivity was effectively absent from the physicians of classical antiquity. That is, of course, true if we emphasize the word "effectively". For the idea itself of infection was widely held, as the following quotations show. The first from Plautus (died 184 B.C.): "Now I know that you have a fever, because I must not touch you." The second from Lucretius (died 55 B.C.):

"At no time did they cease to catch from one another the infection of the devouring plague." The last from Ovid: "What timid man is not afraid of the contagion of a sick man, through fear that he may catch the disease?" Moreover, the Romans used to burn sulphur to fumigate rooms that had held sick persons. This practice was probably no more ineffective then than it is today, but, since it was carried out partly for the purpose of getting rid of noxious properties of the atmosphere, it seems to have been a conscious attempt to destroy infective material. But this fear of contagion was probably not constantly present in the Roman mind, and the overcrowding which possibly occurred in many of the *insulæ* may have greatly contributed to the spread of phthisis and other diseases of the lungs, throat and respiratory passages, which we know from Celsus were common in his time. The custom of kissing a dying person in order to catch his parting breath, and of kissing a corpse just before burial or cremation may have also led to the transmission of disease, as may have the indiscriminate kissing of acquaintances in the streets, which Martial humorously begs may be suspended until the winter season of cold noses is past. According to Suetonius (about A.D. 100), Tiberius (died A.D. 37) appears to have caught a skin disease of the face through having to kiss callers.

All the conditions that we have so far described were superimposed upon a background of endemic malaria. Mr. W. H. S. Jones, in his interesting attempt to show that this disease contributed largely to the decay of the civilizations of Greece and Rome, suggests that it was brought to Italy by Hannibal's soldiers in 218 B.C. He apparently bases this suggestion on a statement by Livy (died A.D. 17) that in 208 B.C. Italy was attacked by a serious disease which produced lingering illness rather than death. But the experience of the Gauls after the sack of Rome seems to show that the Campagna was malarious at least as early as 390 B.C. Malaria may also have been responsible for some of the eight pestilences of unknown nature that afflicted Rome between 500 and 400 B.C., in one of which nearly all the slaves and about half of the free population are said to have perished. But the destruction of the forests to provide wood for shipbuilding during the Punic wars, and the evacuation of the countryside and subsequent neglect of agriculture that resulted in the blocking of irrigation and other drains during Hannibal's invasion, doubtless, despite Sir Ronald Ross's opinion to the contrary, provided more breeding places for the anopheles and so caused an increase in the disease. The transfer of the rural population to Rome thus begun was maintained later by the huge importations of grain paid as tribute by conquered nations. These, of course, brought the price of cereals below a point at which they could be profitably grown in Italy, and the farmers, who had already had a taste of the delights of city life and had become accustomed to living on the dole, were, despite the misguided efforts of the Gracchi (died 132 and 121 B.C.) and others, naturally disinclined to return to the land under such conditions. Their properties thus fell into the hands of large land-owners, who raised sheep on them with the aid of large bands of slaves. Drainage was further interfered with during the civil wars of the classical period, and by the numerous interurban wars between the Greek settlements in southern Italy. The impluvia, the public reservoirs and the pools left by the inundations of the Tiber, maintained a large supply of anopheles and Rome thus became full of malaria. Latin literature contains many references to the unhealthiness of the city in summer and autumn, and Martial in fact urges that schools should be closed in summer, on the ground that children learn quite enough if they remain well. Celsus recommends that only urgent operations should be undertaken during these seasons.

One could give many quotations to show that the Romans were aware of the connexion between marshes and fever, but one from Vitruvius must suffice:

> In choosing a site for a city avoid marshes. The poisonous breath of the creatures of the marshes (i.e., frogs and toads) is blown with the mist into towns by the breeze that gets up at sunrise and makes the place unhealthy. On the other hand, if sea water can reach the marshes the various kinds of marsh creatures cannot live there, and for this reason the towns near the salt marshes at the head of the Adriatic are wonderfully healthy.

I presume that the anopheles cannot breed in salt water. Varro (died 28 B.C.) thought that marshes gave rise to certain invisibly small organisms that entered the body through the mouth and nostrils and caused troublesome diseases. These beliefs led to the drainage of many marshes and the abolition of malaria from large areas of country. But lack of funds at times allowed the blocking of drains and the return of the former conditions. For the same reason or owing to political crises, such as the one that followed the murder of Julius Cæsar (44 B.C.), other extensive drainage schemes that had been planned were not carried out. It was unfortunate that mosquito nets were an Egyptian invention, and as such were mentally associated with the effeminate court of the despised and hated Cleopatra. Self-respecting Romans therefore scorned to use them, and in this attitude they were supported by patriotic poets like Propertius (born 51 B.C.), Horace and Juvenal, although some of the latter spoke feelingly of the annoyance caused by mosquitoes.

There can be no doubt that malaria had an extremely deleterious influence upon the physique and character of the Romans and probably contributed largely in later years to their inability to withstand the onslaughts of the vigorous and uninfected peoples of the north. But we must not forget that the Romans ignored the relation of heredity to disease and encouraged the production of children by the lowest class of citizens, the proletarians or mere "begetters of children", who were regarded as unfit for civic or military duties. This policy, added to the fact that marriage became more

and more unpopular and divorce more and more common among the racially more desirable classes, led, as Lothrop Stoddard has pointed out, to a progressive increase in the percentage of inefficients in the community. This neglect of the part played by heredity must be taken into account together with the evil effects of malaria and of the Roman diet in any attempt to explain the decline of the Roman Empire.

Celsus divides intermittent fevers into quotidian, tertian, quartan and ἡμιτριταῖος (semi-tertian), this last being our malignant tertian. He also says that there are other fevers with a longer periodicity than quartan, but that they are rare. Cicero (died 43 B.C.) wrote of Tiro's "fourth weekly attack of fever". I suggest that this is a reference to relapsing fever. I admit that later Cicero says that he has learned that Tiro's illness has turned to a quartan, but since quartans were proverbially mild this may merely mean that the patient was recovering. Galen knew that a quotidian fever might be caused by the combination of two tertians or three quartans, and a somewhat obscure passage at the end of Celsus's chapter on the various kinds of fevers suggests that he was familiar with the same idea.

To deal with all these diseases and casualties, as well as the injuries inflicted on gladiators, boxers and other performers in the gymnasia, circuses and amphitheatres, the Romans had no public hospitals. Celsus, it is true, speaks contemptuously of the mass treatment given in certain valetudinaria, but these are thought to have been slave infirmaries; I do not know upon what authority. Claudius (died A.D. 54) ordered sick and neglected slaves to be sent to the temple in the Tiber that we have already spoken of, and to be given their freedom on their discharge. The same building was later used for the reception of sick citizens, but that was probably not until after our period; and in any case the treatment given there was purely theurgic. Military surgeons are said to have been present at the battle of Lake Thrasymene (217 B.C.) and later the legions had a regular staff of medical officers with the rank of non-commissioned officers. Large military hospitals were also established in various centres with medical officers attached to them. In Rome and other municipalities salaried physicians were employed by the authorities to attend on the sick poor. The poor also formed burial clubs which advanced a portion of funeral expenses. These may have been the forerunners of our friendly societies. Most patients were, however, attended in their own homes or in those of the physicians, which seemed to have been used partly as private hospitals. The nursing was in the hands of unskilled relations or slaves, although lovers were sometimes privileged to assist in it. Patients who were desperately ill were often placed where they could be seen from the street, so that passers-by might offer suggestions as to treatment. Terence (died 159 B.C.) warns against the acceptance of such worthless advice. I have found no record of what the physicians thought about it.

Juno was the chief of many deities who presided over child-birth, and the Roman mint was situated in the temple on the Capitoline dedicated to her under one of her titles, that of Moneta, or The Adviser, from which our word "money" is derived. Many modern doctors will doubtless find a melancholy satisfaction in the reflection that once at any rate there was at least an indirect connexion between money and midwifery. Parturition was attended by midwives only, although sometimes the surgeon was called in, since Celsus describes the operation for the extraction of a dead full-time infant. This includes traction during pains with a hook, or internal version and decapitation if necessary. The observation of animals killed in the chase had familiarized the Romans with the idea of Cæsarean section. Indeed a law attributed to Romulus required that a pregnant woman should be sectioned at the moment of death in an attempt to save the child. Vergil (died A.D. 19) says that Lichas was born in this manner.

Midwives also procured abortion, which is mentioned by Plautus and which was often sought to avoid the disfigurement caused by abdominal striæ and pendulous breasts, or to prevent the arrival of an inconvenient heir to a legacy. Surgeons of low repute also lent themselves to this practice. Such a one probably was Mr. Eros, who specialized in the removal of brand marks from dishonest slaves and whose services as an abortionist were doubtless in demand by Julia, the profligate daughter of Augustus, whose personal medical attendant he was. Instruments as well as drugs were employed to produce abortion, which was forbidden by law under penalty of death, and the dangers of which were well known, since Ovid remarks that a woman who terminates her pregnancy slays herself.

At the beginning of our period a law attributed to Romulus discouraged infanticide, but towards the end of it Seneca (died A.D. 65) baldly remarks: "We drown our monstrosities."

The treatment of sterility was the function of the attendants of the fertile god Lupercus, to whom Shakespeare refers in "Julius Cæsar". They lightly struck barren women with thongs made from the leather of goats, which were notoriously fertile animals. These thongs probably derived part of their magical properties from the fact that they represented an earlier phallus.

Murder by poisoning was extremely common among the Romans, although the preparation or even the possession of noxious drugs was punishable by death. The chief poisons used were aconite and hemlock; Claudius, however, was disposed of by a dish of mushrooms, which may have been poisonous fungi or edible mushrooms appropriately spiced. But it must have occurred to most of you that many of the ancient deaths attributed to foul play at feasts were really due to acute abdominal catastrophes. Our suspicious under this head are confirmed by an incident in Cicero's thrilling speech on behalf of Cluentius, where he shows that Balbutius, who was alleged to have been instantly

killed by poison at a banquet, had really been suffering from indigestion before he reached his host's house, had been taken suddenly ill there and had died some days afterwards. Here we may confidently diagnose peritonitis following on the rupture of a peptic ulcer. Another episode from the same speech throws a vivid light on this phase of Roman medicine:

> Oppianicus brought to Dinaea that doctor of his who had more than once given proof of his conquering skill. But the lady cried out that she would on no account be attended by one "whose attentions had cost her all her children". However, he called in an itinerant quack and paid him £17. With his first draught he made away with the woman.

In classical times the *medici* were divided into physicians, surgeons, oculists and other specialists. But there was no prescribed course of training and anyone might start practice in any branch of medicine. Well established physicians often took apprentices, and Martial tells of one who was accompanied on his rounds by one hundred of them. Most *medici* in the early Empire were Greeks, since Pliny says that Romans as a rule avoided the practice of medicine, partly because, although it was profitable, its gains were made at great cost of human life, and partly because their fellow citizens placed no confidence in any doctor who did not speak Greek, and that this was true even of patients who did not understand that tongue. For these reasons Romans who became *medici* found it advisable to assume Greek names, just as Australian singers assume Italian ones. Pliny also remarks, in very modern language, that people have less faith in treatment if they understand its nature. He then bursts out:

> Hence in this art alone it comes about that trust is immediately placed in anyone who calls himself a doctor. Moreover, there is no law to penalize lack of knowledge, no example of punishment by death or loss of civil rights. Doctors gain knowledge at our risk and make experiments at the price of our lives. A doctor alone can kill a man with the utmost impunity.

Cicero's *"Pro Cluentio"* supplies us with an excellent illustration of what the education and status of a *medicus* might be. A woman bought from Aulus Rupilius, who had been her late husband's physician, his slave, Strato, because she thought that the latter possessed certain information which might help her in a lawsuit in which she was engaged. Persuasion and torture, however, having failed to elicit anything of value from him, she then, apparently as a consolation for his sufferings, established him in a shop equipped and fitted up for the practice of medicine. Three years later Dr. Strato, as Cicero now calls him, killed two fellow slaves in their sleep, threw their bodies into a fish pond and with a kind of brace-and-bit trephine cut a hole in the bottom of a chest, from which he abstracted about £1,500 in gold and bullion. The shape of the hole aroused suspicions and the trephine and part of the loot were found in Strato's surgery. He was therefore, after further torture, deprived of his tongue and crucified.

Plautus in his *"Menaechmi"*, written about 224 B.C., put on the stage probably the earliest comic doctor in European dramatic literature. But despite his bragging and other obvious faults the *medicus* shows a good deal of clinical shrewdness. In this scene we also meet the clever patient who, when the doctor asked what was the matter with him, replied that that was what the doctor had been sent for to find out. The satirists, who, of course, are not to be taken too literally, are full of uncomplimentary references to doctors. Martial ends one of two epigrams, in which he accuses them of misconduct with female patients, with the bitter gibe: "What a grave profession medicine is!" Out of many I shall quote three epigrams, two by Martial and one by Nicarchus (first century A.D.):

> Diaulus had been a surgeon, now he is an undertaker. He is beginning to put his patients to bed in the old effective way.

> Andragoras died suddenly while in excellent health. He had seen Dr. Hermocrates in a dream.

> Marcus the physician felt the pulse of the marble statue of Zeus. Although of marble, and Zeus, his funeral's today.

But all this shows the dark side of the profession and there is little doubt that, although it included many charlatans and although many able *medici* were slaves or freedmen, yet there were a great many practitioners who had the same social status and were as much respected as the average modern medical man, while distinguished men like Asclepiades and Antonius Musa associated on equal terms with the highest personages. Cicero frequently uses terms of respect when speaking of individual doctors, and the opinion of the authorities about the profession may be gauged by the fact that Julius Cæsar gave the citizenship to Greek physicians to encourage them to settle at Rome, and Augustus freed all physicians from taxation and other civic duties. The doctors at Rome formed a medical college which elected members after testing their qualifications and which enjoyed important immunities and privileges. Many doctors also sought further experience and knowledge by travelling abroad. Alexandria was the Mecca of many of these, since dissections were permitted there while they were legally forbidden at Rome as degrading to the human body.

A passage in Plautus suggests that an ordinary doctor's fee at Rome in his time was about sixpence. Charmes, of Marseilles, got about £2,000 for visiting patients at a distance, and Stertinius Xenophon asked Claudius for £6,000 *per annum* as the price of abandoning his private practice to become court physician. He fee of Craterus, according to Persius (died A.D. 62), was "golden mountains". The freedman Antonius Musa, after his successful treatment of Augustus, was given the status of a knight, and is said then to have charged £1,000 for a single visit and to have made it quite plain that even at that his services were given as a favour.

I am sure that I have long since exhausted your patience, but please bear with me for a few minutes while I conclude with some remarks about Celsus, the only important Roman writer on medicine. He was not a professional physician and his work is

part of an encyclopædia which he wrote in six volumes upon various subjects. He probably had had some experience in the medical care of his household and others, but his book is largely a compilation from Greek sources, although the treatment prescribed in it is doubtless that in vogue in his day. I wish that I had time to summarize for you the whole of his racy introduction, which discusses the various schools of current medical thought. But I can refer to one or two points only in it. The Rationalists claimed that a knowledge of physiology and of the nature and causes of disease was necessary for effective treatment, and that therefore it was not cruel to seek remedies for the law-abiding citizens of all ages at the price of the suffering involved in the vivisection of a few criminals. Their opponents, the Empirics, retorted that experience was the only thing that counted in treatment. If theory agreed with experience, it was unnecessary. If it disagreed, it was wrong. Here we have an early form of the famous dilemma which has been falsely attributed to the caliph Omar at the mythical burning of the Alexandrian library. The Empirics further contended that physiology was essentially incomprehensible, as was proved by the fact that even doctors disagreed in their discussions about it. Moreover, since the agony of vivisection and the admission of light entirely altered the characteristics of the internal organs, vivisectors were medical brigands whose object was to torture men to death rather than to learn the functions of their living organs. Celsus himself, as always, takes the middle path and expresses the opinion that the dissection of corpses is necessary for students, who should know the position and arrangement of organs; but he agrees with the Empirics that since the living abdominal viscera are often exposed in gladiators, soldiers and the victims of highwaymen, physicians can learn all that is necessary about them while engaged in the work of healing and not of slaughter. He stresses the need of the physician to remember that his object is not to combat a disease, but to cure a sick person, and that therefore he must observe whether his patient's constitution is moist or dry, muscular or the reverse, whether he often or seldom suffers from ill-health, what kind of a life he leads, laborious or leisured, in luxury or frugality, and so forth. Celsus attaches great importance to the healing power of Nature. In prescribing treatment he very carefully regulates the patient's food and drink and regards water as the best drink for the sick. We can, however, hardly agree that the feverish patient should be told that drink is very bad for him and that his thirst will depart when his fever does. Celsus urges the need of warmth and fresh air in the sick room, and makes great use of bleeding, cupping, purging, vomiting, sweating, fomentations, massage and exercise. He pays great attention to prognosis. *Distentio nervorum*, which, frankly, I do not understand, is a very bad sign after operations. He uses drugs very extensively, but most of those he mentions are useless, although sulphur, pitch and bitumen are among the remedies prescribed for scabies. In his chapter on hypnotics he recommends the following, without any hint of their relative value: poppy, lettuce, mulberry and leek. Similarly, among caustics are placed arsenic, verdigris, lime, pepper, salt, myrrh, cantharides and the dung of sheep, pigeons and swallows. He gives a long list of antidotes for poisons, but, as usual, most of them are pharmacologically inert. After stating that a patient with rabies fears water, although tortured by thirst, he says that the only treatment is to throw him unexpectedly into a fish pond that he does not know is near and to keep him there, holding him under if he can swim, until he is full of water, when he will lose both his thirst and his fear of water. Some, but not all, cases of apoplexy, Celsus tells us, are caused by thunderbolts. This reminds us how sadly our word "astonished" has degenerated from its original meaning, which was "thunderstruck". He recommends that melancholic patients be purged with black veratrum. Exalted ones should be given an emetic of white veratrum. If a lunatic is irrational he should be starved, bound and flogged when he says or does anything wrong. A sudden fright or any mental upset is beneficial to such patients, "for so it is brought about that they are gradually compelled by fear to think what they are doing". Of course, if we grant Celsus's premises his conclusion naturally follows, and this should make us more charitable in our judgement of those who treated the insane as Malvolio was treated in "Twelfth Night". But I think you will agree that such patients would deserve the annual holiday that Celsus prescribes for them if they recover. He directs that wounds should be stitched with soft thread, not too twisted, if they are small, but if large they should be closed with a metal clasp, which allows better drainage. Wounds of the small intestine are always fatal, but those of the colon should be sutured, as they sometimes heal, and uncertain hope is to be preferred to certain despair. Bleeding is to be controlled by pressure, styptics, the actual cautery, or ligature, the last coming away easily when the inevitable pus forms.

His chapter on operative surgery amazes us by the boldness and extent of the procedures described. He nowhere mentions anæsthetics, although shortly after him Dioscorides, the father of *materia medica* and a surgeon in Nero's armies, distinguished between the analgesic and anæsthetic properties of mandragora. It would therefore probably take a Samuel Pepys to appreciate the full flavour of Celsus's recommendation that the surgeon should not be influenced by the yells of his patient to work more quickly than is desirable or cut less deeply than necessary. But we may easily believe his statement in another place that strength of mind, presumably on the part of the patient, is of great assistance. He gives a hair-raising description of lithotomy, but we may wonder if he ever saw the operation performed through the incision that he recommends should be made in women between the urethra and the pubic bones. Of all the excellent instruments used by the Roman surgeons surely the

strangest is the hen-roost ladder which Celsus prescribes for use in the reduction of dislocated shoulders. He advises delay in the removal of a decayed tooth, but points out that if pain makes extraction necessary the insertion of a peeled peppercorn or ivy berry into the cavity will split the tooth and allow it to fall out in fragments. This treatment is apparently an alternative to forceps extraction, which he describes later. Singer, by the way, in his statement that Celsus describes a dental mirror, has mistakenly translated as "mirror" the Latin word for "probe". I think that Singer is also wrong in his assertion that Celsus described thyreoidectomy.

I may fittingly end by quoting two examples of the general sanity and wisdom that informs the whole of Celsus's book:

> The pulse is an uncertain guide, being influenced by age, sex, exercise, the doctor's visit and other things. It is therefore the mark of a skilled physician not to feel it when he first comes, but to sit down with a cheerful face and ask the patient how he feels, and remove his fear with reassuring talk, and only then to take hold of the wrist.
>
> A doctor should not hide a very sick man's condition from his relations, lest a subsequent charge of ignorance or mistaken treatment be brought against him. But to exaggerate trifling illnesses is characteristic of a mountebank. A doctor should make a definite statement that such diseases are readily curable, as this will make him more careful not to let a trivial complaint grow serious through neglect.

Acknowledgements.

It is a pleasure to acknowledge my indebtedness to my former teacher, Professor R. L. Dunbabin, of the University of Tasmania, who not only lent me books and his own unpublished notes on Roman antiquities, but also generously allowed me to draw freely on his great knowledge of the period. I have also to thank Dr. L. Cowlishaw and Dr. Hamilton Marshall, of Sydney, for the loan of books and journals, Dr. R. W. Cilento, of the Commonwealth Department of Health, for some interesting notes on malaria in ancient Italy, and my friends Dr. Mervyn Archdall, of Sydney, and Dr. W. E. L. H. Crowther, Dr. J. E. Gabriel and Mr. W. H. Hudspeth, B.A., of Hobart, for valuable criticism and advice.

ON THE LINEAR DISTRIBUTION OF RADON SEEDS.[1]

By Wm. H. Love, B.Sc., Ph.D.,
Department of Cancer Research, University of Sydney.

This paper is the third in a series of investigations relating to the determination of intensity distribution in the vicinity of radium applicators of various forms, and is concerned with the particular case of a number of radon seeds arranged in a straight line.

Let A, B, C, D . . . *et cetera* represent n radon seeds, each of strength m, arranged in a straight line at a distance apart of " a " centimetres.

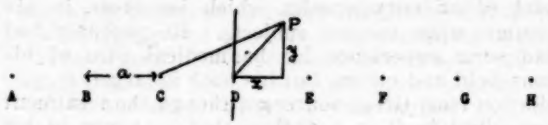

Figure I.

If we now choose, as origin of a system of rectangular coordinates the $\frac{n+1}{2}$th seed, in the case of n being odd or the $\frac{n}{2}$th seed in the case of n being even, and if P be any point whose coordinates are x, y, then the intensity at P is given by

$$I_P=\frac{Km}{y^2+x^2}+Km\sum_{r=1}^{\frac{n-1}{2}}\left(\frac{1}{y^2+(ra+x)^2}+\frac{1}{y^2+(ra-x)^2}\right)$$

when n is odd, and

$$I_P=\frac{Km}{y^2+x^2}+Km\sum_{r=1}^{\frac{n-2}{2}}\left(\frac{1}{y^2+(ra+x)^2}+\frac{1}{y^2+(ra-x)^2}\right)+Km\frac{1}{y^2+\left(\frac{n}{2}a-x\right)^2}$$

when n is even, K being a constant.

In the case of an infinite number of seeds, distributed as above, the formula for the intensity at P becomes

$$I_P=\frac{Km\pi}{ay}\cdot\frac{\text{Sinh}\ \frac{2\pi y}{a}}{\text{Cosh}\ \frac{2\pi y}{a}-\text{Cos}\ \frac{2\pi x}{a}}$$

If, as before, we agree to take as our unit of intensity that intensity at one centimetre distance from a seed (point source) of unit strength, then the constant K in the above formulæ is equal to unity.

In order to illustrate the application of the above formulæ we will determine the iso-dose curves for a limited number of particular cases.

Case I.—*A Single Seed of Unit Strength.* In this case we have

$$m=1$$
$$\text{and } n=1$$

and the above formula reduces to

$$I_P=\frac{1}{x^2+y^2}$$

and the iso-dose curves[1] in the plane of the paper for this case are given by the relation

$$\frac{1}{x^2+y^2}=\text{constant}$$

and form a system of concentric circles as shown in Figure II.

Case II.—*Two Seeds, Each of Unit Strength, One Centimetre Apart.* In this case we have

$$m=1$$
$$a=1$$
$$n=2$$

and the formula for I_P becomes

$$I_P=\frac{1}{y^2+x^2}+\frac{1}{y^2+(1-x)^2}$$

The iso-dose curves in the plane of the paper for this case are given by the relation

$$\frac{1}{y^2+x^2}+\frac{1}{y^2+(1-x)^2}=\text{constant},$$

and are shown in Figure III.

[1] This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

[1] The intensities shown on the iso-dose curves in the illustrations are approximate values.

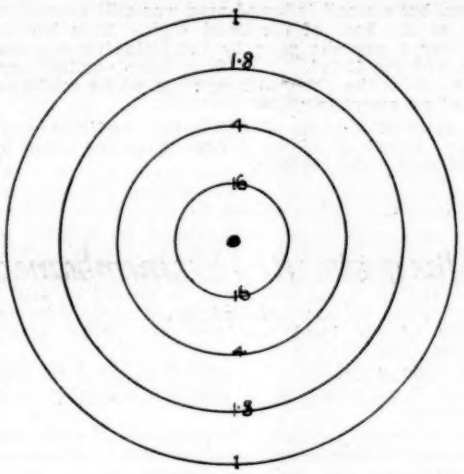

Figure II.

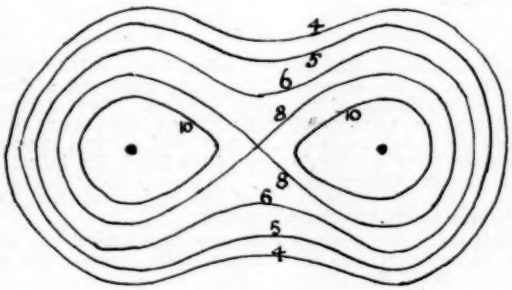

Figure III.

Case III.—*Three Seeds, Each of Unit Strength, One Centimetre Apart.* In this case we have

$$m=1$$
$$a=1$$
$$n=3$$

and the formula for I_P becomes

$$I_P=\frac{1}{y^2+x^2}+\frac{1}{y^2+(1+x)^2}+\frac{1}{y^2+(1-x)^2}$$

The iso-dose curves in the plane of the paper for this case are given by the relation

$$\frac{1}{y^2+x^2}+\frac{1}{y^2+(1-x)^2}+\frac{1}{y^2+(1+x)^2}=\text{constant},$$

and are shown in Figure IV.

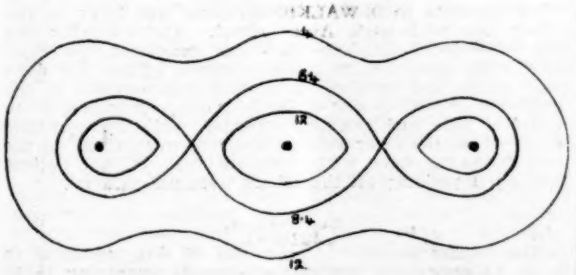

Figure IV.

Case IV.—*A Large Number of Seeds, Each of Unit Strength, One Centimetre Apart.* In this case we have

$$m=1$$
$$a=1$$
$$n=\infty$$

and the formula for I_P becomes

$$I_P=\frac{\pi}{y}\cdot\frac{\text{Sinh } 2\pi y}{\text{Cosh } 2\pi y-\text{Cos } 2\pi x}$$

The iso-dose curves in the plane of the paper in this case are given by the relation

$$\frac{\pi}{y}\cdot\frac{\text{Sinh } 2\pi y}{\text{Cosh } 2\pi y-\text{Cos } 2\pi x}=\text{constant},$$

and are shown in Figure V.

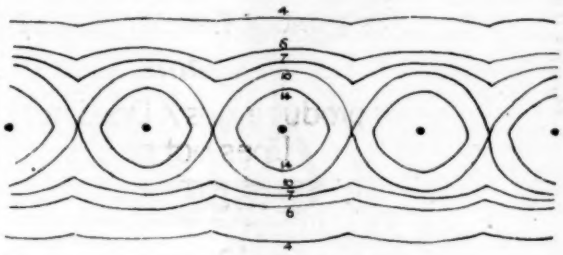

Figure V.

In all cases it is evident that the iso-dose curves, in a plane at right angles to that of the paper, form a system of concentric circles.

Reports of Cases.

UTERINE FIBROID CAUSING INVERSION OF UTERUS.

By H. A. Ridler, M.B., Ch.M. (Sydney), F.R.A.C.S.,
Honorary Surgeon, Royal Hospital for Women, Paddington, Tutor in Obstetrics, University of Sydney.

Mrs. A.B., aged fifty-three years, widow for the last fifteen years, had six children. Her menstrual periods had been regular and lasted two to three days, but she had clots and lost a lot. For the last six months her periods were irregular, occurring every three to six weeks, lasting two to four days; she lost a large quantity. She also had a watery discharge for twelve months, much worse during the last three months. Her reason for seeking medical aid was that "she could not pass her urine till she pressed up a lump which had come out of her front passage"; this first occurred six days before I saw her. At the same time she also experienced severe bearing-down pains and difficulty in walking, but had no trouble with the action of her bowels, which was regular.

On examination a rounded tumour presented at the vulva and completely filled and distended the vagina; the edge of the cervix could be felt anteriorly with difficulty but not posteriorly. Slight upward pressure on the tumour caused urine to run away, and the bladder could be completely emptied only with a catheter.

The condition appeared to be a large polypus projecting from the cervix. Under an anæsthetic the true condition was revealed, when it was possible just to feel the whole of the cervix, and it was that of a fibroid of the fundus of the uterus causing an inversion of the uterus, as is shown in the diagram. The diagram illustrates the position of ovaries and tubes, the shape and relation of the fibroid to the uterus, and is drawn to scale as far as possible.

The abdomen was opened and a supravaginal hysterectomy was done. The fibroid, with the uterus attached, was drawn out through the vaginal orifice and not through the cut cervix and abdominal incision. Owing to its size it was impossible to deliver it otherwise. Obviously one would not remove it through the abdomen owing to the risk of infection from a mass lying in the vagina. A vaginal hysterectomy could not be done, as there was no room in the vagina, which was distended and filled by the tumour.

For such a condition to have occurred the fibroid must have been forced out of the cavity of the uterus, slowly inverting it, and also, once the fibroid was outside the cervix, it increased in size in all directions.

The patient made an uninterrupted recovery.

A SHORT SUMMARY OF FIVE CASES OF ERYSIPELAS TREATED BY EXPOSURE TO ULTRA-VIOLET RADIATION.

By C. R. Morton, M.B., B.S. (Sydney),

Resident Medical Officer, Newcastle Hospital, Newcastle.

Case I.

A female patient, aged forty-seven years, complained of a painful finger. The third digit of the left hand was red, tender and swollen, suggesting a tenosynovitis of the flexor tendon sheath. She was treated every two hours with hot baths. The following day the inflammatory process had spread to the bases of the ring and index digits and slightly on to the dorsum and palmar aspect of the hand. The inflammatory process was red, painful, indurated, with a raised border, and its true nature was recognized as an erysipelas. The condition then spread over the whole of the dorsum of the hand. The patient felt ill and had a temperature of 37·9° C. (100·2° F.). At this stage the dorsum of the hand was exposed to an erythema dose of ultra-violet radiation by means of the mercury vapour lamp. Two more applications of similar dosage were given on consecutive days, by which time the condition had completely left the dorsum of the hand and the fingers, but a small inflamed area was still present on the palm at the base of the third digit. This had spread half way across the palm by the following day and the palm was irradiated. Two days later another exposure was given to the palm, although the whole condition had cleared up completely.

In spite of a tardy diagnosis the condition was completely cleared up in seven days from the onset by the use of ultra-violet therapy.

Case II.

A male patient, aged eighteen years, developed a lymphangitis of the right arm and forearm, extending from the axilla to the middle third of the forearm. There could be discovered no causal lesion and no history of such. The following day the condition had spread to the wrist and the dorsum of the hand was the seat of an erysipeloid inflammation.

The lad had a temperature of 37·6° C. (99·8° F.) and complained of much pain in the arm and headaches, insomnia *et cetera*.

An erythema exposure of ultra-violet irradiation was given and the lymphangitis had completely disappeared on the following day and the dorsum of the hand had improved remarkably. The second dose, given two days after the first, was sufficient to cure the condition completely. No recurrence occurred. Treatment occupied four days.

Case III.

A male patient, aged eighteen years, had a well-developed erysipelas of the dorsum of the right hand and a linear type of erysipelas of the right forearm. Two erythema exposures to ultra-violet radiation on consecutive days cured the condition of the forearm, and marked improvement was seen on the dorsum of the hand, the inflammation having subsided greatly. Two more daily exposures were given to the dorsum of the right hand and the inflammation had entirely subsided.

This lad had a great deal of pain in the hand and arm, but no constitutional disturbances. His temperature was 37·3° C. (99·2° F.).

Case IV.

A male patient, aged thirty-three years, had erysipelas of the face extending over the left cheek, in front of the auricle, across the nose, and partly on to the right cheek. The patient was feeling very much off colour and had a temperature of 37·9° C. (100·2° F.).

The inflammation subsided after one exposure to ultra-violet radiation; the pain disappeared and the patient felt much better. The second exposure was given on the following day, and a third was given a day later with complete cure.

Case V.

A female patient, aged forty-seven years, had severe erysipelas of both sides of the face, extending on to the forehead, the eyelids, down on to the neck and across over the left ear. The patient had a temperature on admission of 38·9° C. (102° F.) and was showing marked constitutional symptoms.

An exposure to ultra-violet radiation was given to the whole face with little improvement. The following day the left side of the face alone was irradiated, the right side being protected from the exposure. This was done with intent and resulted in marked improvement in the condition of the left side of the face; practically immediate relief of pain and swelling occurred, while little change occurred on the right side. Exposures were given on the two following days with complete cure. This patient was an in-patient; all the others were out-patients.

Conclusions.

The results warrant further trial of this treatment in cases of erysipelas, the greatest benefit appearing to be the early relief of pain and swelling.

AN UNUSUAL CASE OF INTUSSUSCEPTION.

By P. L. Hipsley, M.D. (Sydney), F.R.A.C.S.,
Senior Surgeon, Royal Alexandra Hospital for Children, Sydney.

Clinical History.

E.E., aged six and a half months, was admitted to the Royal Alexandra Hospital for Children, Sydney, on June 26, 1934, with a diagnosis of gastro-enteritis. The child had been vomiting off and on for four weeks. The motions had been frequent, green, slimy and blood-stained. There had been great loss of weight. On admission to hospital the temperature was 38·3° (101° F.) and the pulse rate 150 per minute. The tongue was dry and coated, and the child very wasted and dehydrated. The abdomen was lax, there being no tenderness or rigidity present. A freely movable mass could be felt in the abdomen. The vomiting continued intermittently and the child passed several green slimy motions daily and the *Bacillus morgani* was isolated from the stools.

Four days after admission what appeared to be a prolapse of the rectum occurred. This was reduced inside the anus on several occasions, but always recurred, and the child was transferred to my care as probably suffering from intussusception. Examination revealed that the prolapsed bowel was really an intussusceptum which extended for about 12·5 centimetres (five inches) beyond the anus. The child was extremely emaciated and operative treatment appeared to be out of the question unless some improvement in the general condition could be brought about.

After the protruding portion of the intussusception was returned inside the anus, a saline injection was given at a height of three feet, and this reduced the greater part of the intussusception, but still left a small unreduced portion which was palpable in the right iliac region. Twenty-four hours later the intussusception had again extended through the anus. The injection was repeated and the abdomen was opened in the middle line immediately afterwards. There was a small amount of free brownish fluid in the abdominal cavity, and the whole length of the large bowel was covered with plastic lymph, marking the commencement of adhesions between the previously adjacent but now reduced portion of the intussusception. The small unreduced portion was not gangrenous, but was very soft and fragile. It readily yielded to reduction by pressure and gentle traction, but unfortunately the wall of the ceacum was lacerated during the process of manual reduction. The lacerated portion proved to be too soft and fragile to suture, so a lateral anastomosis was done between the ileum and ascending colon and the unhealthy ileo-caecal region was left outside the abdomen. A blood transfusion was given the following day, but the child died of exhaustion forty-eight hours after operation.

Commentary.

This intussusception had probably existed for about five weeks, as the doctor who sent the child into hospital said that he felt a mass in the abdomen at the onset of the gastro-enteritis, but as there were frequent motions he did not suspect intussusception at that time. The obstruction was never complete even up to the time of operation, as the motions were bile-stained and there was never any distension.

In the majority of intussusceptions there is a persistence of the primitive mesocolon, and in this case it was exceptionally well developed, as it allowed the apex of the intussusceptum, which was at the ileo-caecal sphincter, to extend 12·5 centimetres (five inches) beyond the anus, and this without producing sufficient obstruction to the circulation to cause gangrene.

The delay in diagnosis, even though the patient was under the care of physicians especially well qualified to diagnose this complaint, can be explained by the absence of complete obstruction right up to the time of operation.

In cases such as the one recorded, spontaneous cure has been known to occur following the sloughing off of the intussusceptum after many months.

Reviews.

A QUAKER PHYSICIAN.

Those interested in the history of English life in the second half of the eighteenth century and the first two decades of the nineteenth will read with much interest Mr. Johnston Abraham's book on the life and times of John Coakley Lettsom.[1]

Mr. Abraham has brought to the writing of this book all the charm and pleasing style which rendered so popular his well known travel book, "The Surgeon's Log".

The description of the medical life of the period throws many sidelights on the customs and morals of the England of George III and we realize the great influence exercised at this time by a series of eminent doctors, all members of a despised sect—the Quakers. In an age when drunkenness was almost universal and morality among many of the highest and lowest in the land was non-existent, the Quakers formed a little clear stream of quiet, God-fearing people in the turbid flood, and naturally were much disliked, despised and persecuted by their fellow countrymen. In spite of this, the despised sect gave birth to two medical men in Fothergill and Lettsom, who were instrumental in founding great charitable institutions and who helped every movement for the amelioration of the conditions of the downtrodden multitude.

The eighteenth century was a period of strange contrasts. On the one hand we see the poor treated with callous brutality, yet in the last years of the century great hospitals, such as Westminster, Guy's, Saint George's, the London, to mention only a few, were founded. The mob which rejoiced in the hangings at Tyburn and at the bear-baiting at Hockley in the Hole crowded to hear John Wesley preach in Moorfields. The ladies and gentlemen who wore fine silks and laces walked through filthy streets and never thought of having a bath.

John Coakley Lettsom, the subject of this memoir, was born on the island of Little Jost Van Dykes, one of the islands of the Virgin Group of the West Indies, and, coming to London as a student, practised for fifty years in that city and lived and died a member of the sect of Quakers. He was born in 1744 and was one of seven pairs of twins, and he and his brother were the only survivors. The famous physician of the day was John Fothergill, and he took young Lettsom under his care. After studying at Saint Thomas's Hospital, Lettsom returned to Tortola and set free the slaves he had inherited from his father. Returning to England, he studied at Edinburgh under Cullen and visited the Continent and gained his M.D. at Leyden, then the chief centre of medical learning in Europe. Lettsom set up in practice in the City of London and soon had a very big practice, which was greatly increased by the death of his lifelong patron and friend, Fothergill. Lettsom tells us that in 1795 he attended 82,000 patients, and his income one year was £12,000. No wonder he also tells us: "I dine with my wife once a week!" He rose early and sat up late, would walk for a couple of hours in the morning while visiting patients and then take up his carriage, sometimes using three pairs of horses during the day. Dr. William Cuming, his most intimate medical friend, often remonstrated with him and told him that he should apply for an act of parliament to extend the day to forty-eight hours. Lettsom's reply was: "I love my profession and it loves me."

In addition to his enormous practice Lettsom was interested in every intellectual activity of his time, and his benefactions kept him poor. It was a day of the formation of societies and institutions; there were societies for the suppression of vice, for the publication of religious tracts, and innumerable other objects.

Those members of our profession who are interested in swimming and surf bathing will be surprised to hear that they owe a debt to Dr. Lettsom in that he was one of the founders of the Royal Humane Society, which arose

[1] "Lettsom: His Life, Times, Friends and Descendants", by J. J. Abraham; 1933. London: William Heinemann (Medical Books) Limited. Crown 4to., pp. 518, with illustrations. Price: 30s. net.

out of the Dutch Society for the Recovery of Drowned Persons. Dr. Hawes, another London practitioner, read an account of this society, and in 1773 established stations along the River Thames and thus was instrumental in saving many lives. Then another philanthropist came on the scene, Dr. Thomas Cogan, and he, with the assistance of Lettsom, called a meeting at the Chapter Coffee-house in 1774 and at this meeting the Humane Society was born. Faced by ridicule at first, it finally received Royal support and became the Royal Humane Society. It may be of interest to know that two of the original members were Oliver Goldsmith and Heberden. The methods used in resuscitating the apparently drowned make curious reading. Among other strange proceedings was to drive tobacco smoke up into the patient's large intestine by means of a tube introduced through the anus. Another of Lettsom's activities was the Medical Society of London, which he founded in 1773, which he largely endowed, and which is still in existence. It was the only London medical society not absorbed by the Royal Society of Medicine.

Lettsom was one of the chief supporters of John Howard in the campaign for prison reform and wrote a most interesting paper for the Medical Society on the case of Lord George Gordon, who died in prison of gaol-fever after the failure of the Gordon riots. Many will remember the picture of the soldiers firing on the mob, which hangs in the Sydney Art Gallery.

Gaol-fever in those days was a public menace. At the famous Black Assize at the Old Bailey in 1750 the Lord Mayor, one of the justices of the Common Pleas, one of the barons of the Exchequer, an alderman, a barrister, a number of attendants, several of the jury, and about forty of the audience were infected by a prisoner and died.

In a review it is impossible to mention all the manifold activities of our physician, but some few words must be said of his foundation of the Sea-bathing Infirmary at Margate, which is still in existence as the Royal Sea-Bathing Hospital. By this foundation Lettsom is the father of all the open-air sanatoria throughout the world. Of course, at first the benefit was supposed to be due to the sea water, but right from the start Lettsom insisted on the benefits of sunlight and fresh air, and the hospital had open-air solaria.

It is interesting to read that the summer holiday in England was unknown until the reign of George II, and it was only when a physician, Richard Russell (1687-1759), wrote a book in 1750 advocating sea bathing that it became fashionable, and Russell built a fine residence at Brighton, or Brighthelmstone as it was then known, and then all the world, tired of inland spas,

> Rushed coastwards to be cured, like tongues,
> By dipping into brine.

The dangers and difficulties of foreign travel owing to the Napoleonic wars also helped to popularize the seaside. Let us quote the poet Cowper:

> Your prudent grandmammas, ye modern belles,
> Content with Bristol, Bath, and Tunbridge Wells,
> When health required it, would consent to roam—
> Else more attached to pleasures found at home.
> But now alike, gay widow, virgin, wife,
> Ingenious to diversify dull life,
> In coaches, chaises, caravans, and hoys,
> Fly to the coast for daily nightly joys,
> And, all impatient of dry land, agree
> With one consent to rush into the sea.

In the fight for vaccination Lettsom stood at Jenner's right hand and was one of the prime movers in the foundation of the Royal Jennerian Society and various other societies to help the cause of vaccination.

Lettsom used all his influence to avert the War of American Independence, and his sympathies were all on the side of the colonists, and it was only the obstinacy of George III which caused the failure of his endeavours. After the war he resumed his correspondence with Rush and other famous Americans, and his house was visited by every visiting American doctor. Among his lifelong friends was Benjamin Franklin, who was much impressed by his ability.

One of the great loves of Lettsom's life was his beautiful home, Grove Hill, at Camberwell, a few miles out of London. Here he lavished a fortune on the grounds, and the forced sale of this property in 1810 was one of his greatest sorrows. In this home, which he called his "Tusculum", he kept open house, and here he spent what few hours of leisure he could snatch from his overwhelming practice, and to this hospitable roof came everyone famous in literature, medicine and the arts.

He filled the house with all kinds of art treasures, and the library contained over six thousand volumes besides cabinets of shells and natural objects from all over the world. At one end of the grounds was an observatory which was known as the Temple of the Sybils, and here many famous men gathered and tasted the hospitality of our medical Maecenas:

> Cellars with wine of choicest vintage stored;
> A kind good mistress, and a bounteous lord.

The year of Waterloo (1815) was to see the end of this full life. On October 22 he performed a *post mortem* examination and the next day felt chilly and unwell, and on November 1 he died, one more medical victim to a wound from a *post mortem* examination.

His epitaph may be written in the words of his friend Pettigrew:

> It may confidently be asserted that no proposal for the public benefit was ever offered to his consideration in vain.

The book is beautifully produced and is full of interesting portraits and pictures. It should be read by every medical man who only remembers a very famous physician by the doggerel verse:

> When any sick to me apply,
> I physics, bleeds and sweats 'em;
> If after that they choose to die,
> Why verily, I Lettsom!

Notes on Books, Current Journals and New Appliances.

THE BRITISH JOURNAL OF TUBERCULOSIS.

For twenty-seven years Dr. T. N. Kelynack acted as editor of *The British Journal of Tuberculosis*. He has now relinquished the editorship. Dr. L. S. T. Burrell, whose writings on tuberculosis are well known, has taken over the editorship. Dr. Kelynack will act as consulting editor. In the number for July, 1934, some changes for future issues are forecasted. The issue for July, 1934, contains some interesting articles. Dr. Herbert D. Chalke writes on tuberculosis in Wales; Dr. T. A. Grant Keddie writes on influences adverse to tuberculosis patients; Dr. Th. Rüedi and Dr. Bernard Hudson contribute some notes on alpine climate in connexion with laryngeal tuberculosis; Dr. Charles Mayer writes on the gold treatment of tuberculosis. We wish Dr. Burrell every success in his editorship of the journal.

A POCKET MEDICAL DICTIONARY.

The tenth edition of "Gould's Pocket Pronouncing Medical Dictionary" is to hand.[1] This publication is, as most readers of this journal know, extremely valuable. As a book of ready reference it can be recommended to undergraduates who have not yet made its acquaintance. In the present issue the long tables which in previous editions broke up the continuity of the vocabulary, have been printed at the end of the book as an appendix. One of the most useful is a table in which are set out the bacteria pathogenic to man, both the old and the new terminology being used.

[1] "Gould's Pocket Pronouncing Medical Dictionary of the Principal Words Used in Medicine and the Collateral Sciences", by the late G. M. Gould, A.M., M.D.; Tenth Edition, revised by C. V. Brownlow; 1934. Philadelphia: P. Blakiston's Son and Company. Foolscap 8vo.

The Medical Journal of Australia

SATURDAY, OCTOBER 6, 1934.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

THE RECENT MEETING OF THE FEDERAL COUNCIL.

At the recent meeting of the Federal Council of the British Medical Association in Australia, which was reported in the issue of September 15, 1934, many important matters were discussed. The report of the meeting was made as full as possible, but at the same time emphasis should be laid on some of the decisions that were made.

The determination to hold the next session of the Australasian Medical Congress (British Medical Association) in 1937 will be welcomed by all members of the Branches. The annual meeting of the British Medical Association to be held next year in Melbourne will for Australian practitioners be in many ways the same as a session of Congress. It will be largely attended, will be the occasion of much enthusiasm and will promote a feeling of unity among members of the Branches. This, combined with the interval of two years before the fifth session of Congress meets, will insure the success of the fifth session. The place of meeting will not be decided until the Branches have had an opportunity of issuing invitations to the Federal Council. As far as the revision of by-laws governing congresses was concerned, most of the matters put forward in this journal recently were discussed. By appointing several of its members to be *ex officio* members of executive committees of future congresses, the Federal Council has shown that it is alive to the necessity for continuity of method in running the congresses and that it wishes to lighten, as far as possible, the burdens of what is often a worried and harassed executive committee. From the attitude of the Federal Council also it may be concluded that the way will soon be open for the executive committee of a congress to inaugurate a section of comparative medicine. The report of the subcommittee that is to deal with this matter will be awaited with hopeful interest, for its members have the opportunity of making a step forward in the collaboration of Australasian scientists.

The relationship of congresses to the public Press is to come up for further consideration. In this connexion we would urge the excellence of the opportunity that occurs at congress time of keeping the public informed of what is being done to promote the public health. It should be an easy matter for a censor or an editorial committee to distinguish between subjects that should be brought to the public notice and those that are calculated merely to advertise the reader of a paper. If doubt arises, the public good should surely be paramount. The medical profession that talks so much of educating the public should lose no opportunity of putting its beliefs into practice.

Reference to the work of the Federal Council would not be complete without some mention of the Australasian Pharmaceutical Formulary. This publication has been issued under the authority of the Federal Council; it is an attempt to standardize drugs for use in Australia and New Zealand. Medical practitioners who use this book will find that their prescription writing is made easier, they will help the pharmacists to no small degree, and they will probably lessen their patients' expenditure on drugs.

A final word needs to be uttered regarding finance. A body like the Federal Council cannot exist with-

out financial resources. There is no need to enumerate the advantages that accrue to the Branches by the existence of the Federal Council. The Federal Council, with The Medical Journal of Australia, which it created, is the bond of union between the Branches. No one will deny that there is need of union between the Branches, either from the scientific or medico-political points of view. The Branches cannot have these advantages without paying for them. Increased demands will probably have to be made on the Branches, for as the Federal Council extends its activities, as it must, more money will be needed. Steps are to be taken for the introduction of a new by-law so that the limit of the *per capita* payment from the Branches to the Federal Council may be raised from two shillings to five shillings *per annum*. The increased amount will not be asked for unless it is required. We have every confidence in stating that the Branches know what the Federal Council means to them and that they will be prepared to stand behind it in all that it tries to do for them and for medicine in Australia.

Current Comment.

UNSUSPECTED SYPHILIS.

In spite of the insistent teaching and preaching of all great clinical authorities, there is no doubt that today there is a danger that syphilis is often overlooked. Perhaps one reason for this is that syphilis is thought of as something apart in the realm of disease, not only by the comparatively ignorant laity, but by some medical practitioners who should know better. The treatment of syphilis, too, has passed out of the hands of the physician and general practitioner to a great extent and is largely in those of the dermatologist. There is no question of the adequacy of the treatment given by special practitioners in this field, but the real difficulty is that these men are not primarily concerned with internal disease, and consequently the medical profession in general is in danger of thinking that syphilis is a disease of external manifestations. No doubt all practising members of the profession would deny this allegation, but does the possibility of spirochætal infection enter the doctor's mind in all atypical maladies? It should be one of the first thoughts that come, but is it? In an article on the subject of unsuspected syphilis G. D. Astrachan deals with this point—the importance of this disease in the causation of aberrant clinical pictures—and in his bibliography of nearly fifty references to literature, nearly half of these are articles written on the topic of unsuspected syphilis.[1] He quotes Stokes as saying that from 7% to 10% of the population of the United States of America are syphilitic, and this percentage is regarded as correct for the public hospital classes at least of most communities. Much higher figures than these are given by others in special circumstances. Thus Warthin, a well known and enthusiastic worker in the field of visceral syphilis, records syphilitic lesions in 40% of the cases coming to autopsy in Ann Arbor over a ten-year period. Stokes and Brown are also quoted as describing 200 syphilitic patients whose complaint was "stomach trouble", but 64% of whom were unaware of their having been so infected. It is interesting to note that random references to literature reveal an unsuspected syphilitic element in patients who were under treatment for the following diseases (as diagnosed): gastric carcinoma, inflammations of joints thought to be due to other causes, myocarditis, tuberculosis, epilepsy, asthenia, gall-stones, appendicitis, pernicious anæmia, Ménière's syndrome, and various organic diseases of the nervous system.

In answering the question as to what are the causes of unsuspected syphilis, Astrachan replies that there are six contributory factors. These are: (i) the disease is often undiagnosed in its first few months, (ii) many physicians are not well informed on the subject of syphilis, (iii) congenital syphilis is easily overlooked, (iv) syphilitic infection may pass unnoticed in women (Fournier gave the ratio of unsuspected syphilis in men as contrasted with women as one to six), (v) patients who have a known specific infection will often not admit it, and (vi) the attitude of society towards this disease is wrong, for it is absurd to regard as essentially disgraceful an infection that destroys so many of the community and that is perhaps in as many as 50% of cases contracted innocently.

Astrachan gives three tests: the performance of the Wassermann test on the blood, both with and without a provocative dose of an arsenical, and the test carried out on the cerebro-spinal fluid. To these he adds the therapeutic test, and he seems to regard the favourable response of any patient to antispecific treatment as presumptive evidence in favour of syphilitic infection, even though no response had been obtained to the routine tests. He admits that the Wassermann reaction is not free from fallacy, and points out that no reaction is obtained in from 60% to 70% of cases of latent syphilis, but none would disagree when he asserts that this test is the most valuable means that we have of discovering the presence of syphilis in obscure medical cases. Indeed in some hospitals now the test is carried out on all patients as a routine measure. His gallery of cases presented in this paper is most interesting. Examples may be cited. One is the case of a woman treated for recurrent peptic ulcer for fifteen years, in which complete relief was obtained by antisyphilitic

[1] *American Journal of Syphilis and Neurology*, July, 1934.

treatment. Another patient was treated for pains in one ear associated with troublesome tinnitus. Tonsillectomy and treatment directed towards the paranasal sinuses gave no relief, but at this stage pain in the eye was complained of, and a Wassermann test performed at the request of the ophthalmologist proved the real nature of her complaint. It is interesting, if humiliating, to have to record the fact that the dermatologist to whom she was now referred for treatment discovered an extensive syphilide on one arm. In another case the patient's complaint of pains in the back led to a diagnosis of lumbago, and tonsillectomy was performed to remove what was thought to be the responsible septic focus. No benefit was felt by this man, and both the blood and cerebro-spinal fluid responded strongly to the Wassermann test. Cases are also cited in this article illustrating the value of cerebro-spinal fluid tests, even where no reaction is obtained from the blood, and also to show how antisyphilitic treatment will sometimes clear up symptoms that are suspicious, but not associated with reactions in the blood and cerebro-spinal fluid. It is perhaps cases of the last variety that account for the faith of many of the older clinicians in iodides. Enough has been written to show the importance of this matter. The general public and the profession alike must not be allowed to think that syphilitic disease is unusual or that its diagnosis is obvious. Of course, we must be careful not to foster syphilophobia, but we must remember that it is not only the classic "not looking" rather than the "not knowing" that is a common source of error; it is not having the important diagnostic possibilities in the forefront of one's mind.

LOBAR PNEUMONIA.

The disaster most to be feared in lobar pneumonia is circulatory failure. This has usually been regarded as due to impaired myocardial function, the result of poisoning by the products of the pneumococcal infection. The lowering of blood pressure caused by this presumed cardiac failure has been used as a guide to prognosis and treatment. Within recent years a number of investigators have discarded the views that have been held for so long. They have pointed out that the blood pressure often tends to rise in severe pneumonia and that in most cases the heart functions quite efficiently. As an argument against these modern views it is worthy of note that such a learned physician and astute observer as Osler stressed the importance of maintaining a watch on the blood pressure.

In a recent valuable paper C. Bruce Perry, of the University Centre of Cardiac Research, Bristol General Hospital, discusses the state of the peripheral circulation in lobar pneumonia and the bearing it may have on the production of circulatory failure.[1] Perry made observations of the skin colour, the blood pressure, the response of the vessels of the skin to histamine, adrenaline and stroking.

The intensity of the skin colour was measured by means of the colour scale published by Lewis (*Heart*, Volume XV, 1929-1931). There was no very pronounced increase in the intensity of the skin colour save in one fatal case; Perry remarks, however, that there appears to be a tendency to deepening of the colour and that a pronounced deepening is of evil omen. The investigations of the blood pressure revealed a tendency to a rise rather than a fall; but it should be noted that there was no record of the blood pressure before the onset of pneumonia. In making the tests with histamine, Perry made a light scratch on the skin of the forearm through a drop of a 1 in 6,000 solution of histamine acid phosphate. In every case a central wheal and surrounding flare developed. The response to stroking was normal (the appearance of a red line with a zone of blanching) in most instances; but in two of the fatal cases and in several others there was no zone of blanching. In the only other fatal case in the series, the patient, who died of meningitis after the crisis, responded normally to the stroking test. In every case, excepting one in which death occurred, a light prick of the skin of the forearm through a drop of a 1 in 1,000 adrenaline solution was followed in two minutes by localized blanching. Lewis has shown that a back pressure of 80 to 100 millimetres of mercury is required to obliterate this blanching in normal subjects. Perry confirmed Lewis's findings. In the test a sphygmomanometer cuff is applied to the arm, above the lesion, and distended until the blanching disappears. Perry found a "close correlation . . . between the degree of toxæmia and the ease with which the area blanched by adrenaline could be obliterated by back pressures". He remarks: "The greater the toxæmia, the less the back pressure required." He divides cases into four groups: (i) those in which adrenaline causes no blanching; (ii) those in which blanching is obliterated by a pressure of 30 millimetres of mercury or less; (iii) those in which the blanching is obliterated by a pressure of more than 30 and less than 70 millimetres of mercury; (iv) those in which the blanching withstands a back pressure of 80 millimetres of mercury or more. In his series the one patient in the first group died; the patients in the second group were dangerously ill, and one of them died; the patients in the third group had pneumonia of average severity; those in the fourth group were not so seriously ill as the others, though one of them died, after the crisis, of meningitis.

Perry concludes that there is impaired contractility of the capillaries at the height of the disease and that this accounts for part at least of the circulatory failure in lobar pneumonia.

If Perry's views are proved correct, perhaps the most important outcome will be the necessary changes in methods of treatment, which will have to be directed less towards whipping a supposed flagging heart and more towards increasing the tone of the peripheral vessels.

[1] *The Quarterly Journal of Medicine*, April, 1934.

Abstracts from Current Medical Literature.

PÆDIATRICS.

Cystic Dilatation of the Common Bile Duct.

F. Parkes Weber (*The British Journal of Children's Diseases*, January-March, 1934) reports the autopsy findings in a girl he demonstrated four years previously as an example of "idiopathic hepatic cirrhosis with recurrent jaundice". She then had a much enlarged liver, telangiectases on her face, slight obstructive jaundice. She gave a history of recurrent attacks of jaundice, pain in the upper part of the abdomen, but no history of hæmatemesis. She was fat and had some anæmia, but no splenomegaly. Tests for hepatic insufficiency gave positive results. Biochemical investigation of her blood was uninformative. The Meinicke and Wassermann tests both gave no reaction. Before her death, three years later, unaccountable bulging was evident in the epigastrium. It was thought to be due to a collection of fluid in the lesser peritoneal sac. The *post mortem* examination showed a relatively fine "hobnailed" liver, and the great distension of the abdomen was found to be due to a cystic dilatation of the common bile duct, as large as a man's hand. Fatal collapse had evidently been caused by a tear of the cyst wall with resulting hæmorrhage. The upper portion of the duodenum was elongated, having been stretched over the wall of the cyst, which proved to be a localized but extreme dilatation of the cystic duct itself.

The Intradermal Tuberculin Test.

J. W. E. Cory (*Archives of Diseases in Childhood*, June, 1934) gives a detailed account of his results in the use of the intradermal tuberculin test over a period of four years, with special reference to so-called surgical tuberculosis. Two hundred and thirty-eight children under twelve years of age were tested. The author prefers a dilution of 1 in 100 or 1 in 250 in many instances, as he considers that, if a weaker solution of 1 in 1,000 is in general use, the response is too weak to be conclusive in patients who are definitely tuberculous but not seriously ill. The patients are grouped according to areas affected, as follows: diseases of bones and joints, abdominal conditions, intracranial conditions, febrile conditions, glandular affections, urinary affections, chest conditions, and a miscellaneous group. An analysis indicates that the test is more useful in the surgical than in the medical forms of tuberculosis. In the group of bone and joint diseases the reaction was more accurate than in any other group. In the whole series of eighty-nine tuberculous patients, eighty-five gave positive reactions and five did not react. Negative results were obtained in one hundred and thirty-one non-tuberculous patients. Seventeen patients who were under treatment for non-tuberculous conditions gave positive reactions. The author's findings confirm the contention of Mantoux that a negative result to a test is an argument of the first order in excluding clinical tuberculosis, except in measles, meningitis and miliary tuberculosis and advanced cases with marked toxæmia; and that, contrary to most clinical methods, the value of the intracutaneous test lies in its negative results. The younger the child, the greater the significance attached to a positive result, which signifies that the child either has or has had tuberculosis.

Obstructive Laryngitis.

Erling S. Platou and Herman Hilleboe (*American Journal of Diseases of Children*, May, 1934) discuss the treatment of obstructive laryngeal dyspnœa of infectious origin in an analysis of 352 cases. Thirty-five of the patients died very soon after admission to hospital. Of the others, 255 had diphtheritic and 62 non-diphtheritic laryngitis. The authors recommend direct laryngoscopy as a preliminary measure in practically all cases of obstructive laryngitis. The diphtheritic patients are grouped according to the degree of severity of the condition. Thus they are defined as minimal when there is œdema with little or no membrane in the larynx, moderately advanced when there is a considerable amount of fairly loose membrane in the larynx, and advanced when there is tracheo-bronchial membrane or when large amounts of pharyngeal membrane are present with laryngeal symptoms. The authors consider that intubation is the best method of treatment in the minimal cases. In moderately advanced conditions laryngeal suction through a metal catheter inserted into the larynx with the aid of a laryngoscope should be first employed; the necessity for subsequent intubation is thereby reduced. Tracheotomy is generally required in the advanced type with considerable tracheo-bronchial membrane. The non-diphtheritic group includes patients with acute catarrhal laryngitis and acute exudative laryngo-tracheitis, such as occurs at times with measles, scarlet fever and influenza. The mortality associated with the exudative group is particularly high, regardless of the method of treatment, which is either by tracheotomy or by suction and intubation.

Tonsillectomy.

R. F. Guymer (*British Journal of Children's Diseases*, April-June, 1934) records the results of his observations before, during and after tonsillectomy on 182 patients over a period of six years. The author stresses the importance of a thorough physical examination beforehand and the exclusion of any other pathological condition which might account for the condition of the patient. The clotting time of the blood is estimated and sodium bicarbonate is given three times a day for three days before operation. Glucose is also administered during this period. An operation for dissection is described; dissection was the method employed in every case. Deep breathing exercises night and morning are advised when the patient gets up. Provided proper attention is paid to the patient before, during and after the operation, the risk of the operation is infinitesimal. In this series there was no operation mortality or morbidity. The improvement in such conditions as mouth-breathing, frequent colds, enlarged cervical glands and deafness was pronounced. No material effect was noted in chronic hoarseness or in repeated bronchitis. The results in malnutrition were definitely encouraging. Subacute rheumatic manifestations disappeared, except when chorea was present; in some instances chorea was definitely aggravated by tonsillectomy.

Paracentesis of the Pericardium.

Lucy Porter Sutton (*American Journal of Diseases of Children*, July, 1934) reports the case histories of eleven children with pericardial effusions upon whom paracentesis of the pericardium was performed as a therapeutic measure. The author emphasizes the significance of the posterior signs in pericardial effusions, previously described by Curschmann and Conner, and the importance accordingly of a posterior tapping. Even when a large amount of fluid is present, a pericardial friction rub may be heard over the precordium and an anterior tapping is more likely to yield blood than pericardial fluid. The posterior signs are an area of flatness below the angle of the left scapula, bronchial breathing over the same area, and bronchophony or aegophony. X ray examination, particularly fluoroscopy, is an invaluable aid in diagnosis. Daily blood pressure readings are also advisable, as the pressure rises as the amount of pericardial fluid increases. The author points out that, although the prognosis for length of life is poor in these patients and it is doubtful whether the ultimate result is altered by paracentesis, the measure is of undoubted therapeutic value in alleviating symptoms.

Treatment of Chorea.

I. B. Silber and J. W. Epstein (*Archives of Pediatrics*, June, 1934) give an account of their experiences in the treatment of chorea with phenyl-ethyl-hydantoin ("Nirvanol"). Twenty-eight children were treated. Ten of these showed "'Nirvanol' sickness" (fever and rash) with improvement in or complete cessation of choreiform movements. Nine showed "Nirvanol" sickness with little or no improvement of choreiform movements; and in nine there was absence of "Nirvanol" sickness and no improvement in the movements. The last mentioned group consisted mostly of children with mild attacks of chorea. The dose varied from 0·3 to 0·9 gramme, given daily over periods of from four to fourteen days. The drug must be discontinued when a rise in temperature occurs or on the

appearance of a rash. The authors met with no complications in the use of "Nirvanol". The drug has no deleterious effect on an already existing cardiac disease. "Nirvanol" is of no value in mild cases of chorea and gives its best therapeutic effect in severe cases. It does not lessen the number of recurrent attacks of chorea.

ORTHOPÆDIC SURGERY.

Bone Transplants.

Helge Camitz, Hjalmar Holgren and Harald Johansson (*Acta Chirurgica Scandinavica*, Volume LXXV, 1934) give the results of investigations based upon transplantations of homologous fragments of radii carried out on dogs as experimental animals. In most of the animals the transplantations were carried out so that the fragment, with its periosteal covering, was transplanted from the right radius to the left and *vice versa*. In one animal the radius was hollowed out to half way down the thickness of the compact bone, in another down to the marrow cavity. The animals were killed after periods varying from 48 hours to 196 days after transplantation. From examination of the sections the following conclusions were drawn: A commencing reaction in the periosteum of the graft is observed after 71 hours. After about five days the proliferating connective tissue in the surroundings of the graft adopts the character of a connective tissue callus which unites with the collagenous trabecular structure (myelogenous callus tissue) simultaneously developing from the endosteum of the host bone. After another five days the periosteal callus tissue is likewise beginning to form. While the connective tissue callus more and more adopts the character of bone callus, the myelogenous callus tissue undergoes powerful development within the marrow cavity and the periosteal callus especially within three typical areas: close to the defect, in the host bone and diametrically opposite to this. After about 42 days the myelogenous callus tissue has mostly disappeared, while the periosteal callus remains within the previously mentioned three areas. After 60 days definite degenerative changes are observed (nuclear pycnosis, diffuse obliteration of lamellar arrangement) within the peripheral parts of the graft; at the same time, as the callus tissue within the defect of the host bone more and more adopts the character of a definite lamellar bone tissue, the periosteal callus tissue begins to break down. Certain parts of the graft are probably reformed during the process of union in the above manner; others again retain their original structure unaltered. Hand in hand with the progress of the union of the graft, this gradually adopts the character of a definite lamellar bony tissue. After 196 days there are only scanty remains left of the previously powerful periosteal bony deposits. The reaction exhibited by the bone of the host and the bone graft is not entirely at an end after 196 days. The osteoclasts, which are an expression of the breaking down of the bone tissue, can be seen after about seven days on the surface of the graft and are observed subperiosteally even after 196 days within such areas where periosteal deposits are still to be found. No prominent part would seem to be played by the periosteum and the endosteum of the graft for the bone regeneration, although their presence and vascular supply would seem of great importance for an ideal union. Such parts of the graft that fit in well in the architecture of the host bone will be mostly retained. The compact bone of the graft will ultimately stimulate the surrounding tissues to new bone formation (metaplasia). The importance of the periosteum and the endosteum of the host bone for the bone regeneration is obvious. The compact bone also plays some part in this regeneration. The authors think it important to protect from damage the periosteum in those three typical regions within which the periosteal callus tissue is formed in bone grafting; this callus tissue constitutes the biological reaction set up by the bone of the extremity to stability disturbances within.

The Behaviour of Transplanted Bone.

Maxwell Harbin and K. E. Liber (*Surgery, Gynecology and Obstetrics*, August, 1934) state that in the field of reconstructive bone surgery Ollier first gave definite evidence upon which much of the present-day technique is based. The rôle which the periosteum plays in bone formation was carefully worked out by him and today stands disputed, but not disproved. Ollier's belief that homogeneous periosteal transplants do regenerate bone is upheld by some, while other workers contend that pure periosteal transplants do not regenerate bone and that seemingly successful results have been obtained because bits of cortex and cambium layer have been removed with the periosteum. Be that as it may, it is of practical importance to know that bone regeneration can be expected to occur following subperiosteal resection and transplantation of periosteum removed under aseptic conditions with careful technique. The authors state that the circulation is a very important factor, and they conclude that the nutrient vessels which supply the medulla and inner half of the cortex enhance active repair in the absence of the two other systems. The metaphyseal system supplying the same areas affords slower but complete repair in the absence of the two other systems. This is noticeably marked at the mid-shaft. The periosteal system nourishing the periosteum and outer half of the cortex does not establish a collateral supply in the medulla under four weeks, and in the absence of the two other systems produces poor healing of cortical defects. In regard to the shaft as a whole, bone regeneration depends upon a blood supply from the systems in the order mentioned. They state that the rôle of the periosteum has been discussed, but in addition to the question of its power to regenerate bone *per se*, this covering has other functions. They quote Mock as believing that the periosteum, together with the endosteum, contains the chief factors for osteogenesis, and Ely as showing that osseous union is good, provided the periosteum is intact; that with complete division of the periosteum non-union results; and that if the periosteum is slit longitudinally in several places, union may or may not occur. From this Mock concludes that the periosteum probably protects the enclosed hæmorrhage and granulation tissue, that it has no bone-forming function and that bone is not built out of it. The authors consider the cambium layer of striking importance, as bone regeneration usually takes place in its presence, but that it is impossible at present to conclude definitely whether or not living cortex produces new bone. They state that the reports of Johnson, Brooks, Mayer and Wehner, Mock, Ely and Campbell lead to the conclusion that endosteum forms callus. The authors are of the opinion that marrow does play some part in contributing endosteal cells for bone production. The question of whether or not a bone graft lives is still much debated. From a surgical standpoint it has been amply demonstrated that bone defects can be repaired by transplanting or grafting periosteum, osteum and periosteum, osteum and endosteum, complete sections to include all layers, complete bone segments and even entire joints. There are several ways in which bone may behave, and the reparative process may not always be the same. It is the authors' opinion that metal plates should be discarded in favour of living bone grafts in all fractures in which solution of continuity cannot be repaired without the aid of an internal splint. The onlay graft has the advantage of incorporating only living tissues in the repair, as the graft is secured with autogenous bone pegs. The inlay graft affords a stronger splint, but requires careful fitting and should be secured into a carefully prepared bed with braided silk ligatures. The osteoperiosteal graft may be used in fractures not requiring an internal splint. The medullary graft is to be condemned, as it is in direct opposition to normal bone physiology and its use more often results in failure than in success. The sliding graft is good and can always be used in fractures in which sufficient bone length is present to permit a graft of adequate length to be cut. It is valuable because only one operative field is necessary. It avoids the danger of cross-contamination. Massive transplants are of value in replacing bone which has been resected. The procedure is usually carried out in two stages in an effort to maintain at all times an adequate blood supply for the transplant fragment.

British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch of the British Medical Association was held at the Women's Hospital, Crown Street, on July 19, 1934. The meeting took the form of a series of demonstrations by the members of the honorary staff.

Acute Eclampsia.

Dr. E. Ludowici showed specimens that had been obtained *post mortem* from a married woman, aged twenty-eight years, whose history was unknown. She was admitted to hospital on July 3, 1934, after having had an eclamptic fit in the front hall. No arrangements had been made for her admission to the Women's Hospital. It was discovered later on that the patient had had at least eight fits before her admission and that particulars of these fits had been sent to another hospital. On examination a moderate amount of œdema was present. The systolic blood pressure was 160 and the diastolic pressure 100 millimetres of mercury. Uterine contractions were present. The temperature was 39·7° C. (103·6° F.) and the pulse rate was 120 in the minute. The patient was in deep coma. The blood urea was 80 milligrammes *per centum*. The patient had a second fit on her way to the ward. Eliminative treatment was given. No further fits occurred, but on the day following admission the patient was still comatose and in the second stage of labour. It was decided to deliver the child by forceps, but the patient died while preparations were being made. The fœtus was found to be macerated. At *post mortem* examination pulmonary congestion and œdema were found and numerous hæmorrhages were discovered, especially in the liver. A large retroplacental clot was present.

Abscess of the Breast.

Dr. Ludowici showed two patients who had suffered from abscess of the breast.

The first patient was a woman, aged forty-three years, who was admitted to hospital on July 18, 1934. The patient had eight living children. She was pregnant and had nearly reached full term. She had a superficial abscess in the region of the areola of the left breast. This abscess had been forming for one week. Dr. Ludowici pointed out that it was unusual in hospital practice to find abscesses of the breast before delivery. General practitioners, however, stated that they were not uncommon in private practice.

The second patient was a woman of twenty-five years, a *primipara*, who was admitted to hospital on June 23, 1934. Her child was born on the day of her admission to hospital. Her perineum was torn. A mastitis occurred on the left side on July 3, 1934, and the condition gradually became worse. A considerable amount of thickening appeared, and on July 15 an incision was made over the brawny area, although no fluctuation was present. Pus was found and a counter-opening was made to secure dependent drainage. Dr. Ludowici said that the usual method of opening an abscess of the breast was by a radial incision through the skin, followed by exploration with the sinus forceps and the finger. Mastitis, especially in its milder forms, was often associated with slight uterine sepsis and cleared up when the sepsis was treated.

Unsuspected Syphilis.

The next two patients shown by Dr. Ludowici emphasized the value of the routine use of the Wassermann test during antenatal examination in the discovery of unsuspected syphilis.

The first patient, aged thirty-six years, was admitted to hospital on June 28, 1934. She had four living children, their ages varying from nineteen years to thirteen months. She had had two miscarriages, four years and three years ago respectively. No clinical signs of syphilis were present, but on the routine use of the Wassermann test in the out-patient department a positive reaction was obtained. Anti-syphilitic treatment was instituted and a child that was apparently healthy was born on July 11, 1934. At the time of the meeting the report of the pathologist on the result of the Wassermann test of the child's blood had not been received.

The second patient was twenty-seven years of age. She was admitted to hospital on July 3, 1934, at full term with her first pregnancy. The patient was admitted to hospital for antisyphilitic treatment following a positive response to the Wassermann test on routine examination in the out-patient department.

Hyperemesis and Spontaneous Miscarriage.

Dr. Ludowici also showed a woman, aged thirty-three years, who was admitted to hospital on June 24, 1934. The patient had four living children. She had had one miscarriage. Her previous pregnancies and puerperia were normal. She had had scarlet fever as a child. Three and a half years previously she had been submitted to tonsillectomy on account of recurrent sore throats. Her last menstrual period had occurred from March 5 to 12, 1934. She had vomited for one month before her admission to hospital.

Examination at the time of the patient's admission revealed acetonuria; the pulse rate was rapid and the patient was very weak. She was given glucose intravenously and by the rectum. On July 7, 1934, she had an incomplete miscarriage. Two days later curettage of the uterus was performed and, although the pulse rate was still rapid, no further vomiting took place.

In commenting on the case, Dr. Ludowici pointed out that hyperemesis did not as a rule end in spontaneous abortion. Vomiting ceased soon after the emptying of the uterus, whether this occurred spontaneously or was brought about by artificial means. The chief indications for the termination of pregnancy were the serious general condition of the patient, indicated by the occurrence of a subicteric tinge of the conjunctiva, and by obtaining positive results to the Van den Bergh and Fouchet tests.

Bilateral Thrombosis, Proteus Pyelitis and Mastitis, Complicating the Puerperium.

Dr. Ludowici's next patient was a *primipara*, aged twenty-one years, who was admitted to hospital on May 29, 1934. Her last menstrual period had occurred from September 2 to 5, 1933. She was admitted to hospital on account of disproportion in the pelvic and fœtal measurements. An infant was born on June 6, 1934, after the application of forceps. The perineum was ruptured. Pyrexia occurred after delivery and the lochia were offensive. Mastitis which was present resolved. Proteus pyelitis was found on examination of the urine. Thrombosis of the left leg occurred in the third week of the puerperium. On July 9, 1934, thrombosis of the right leg occurred with œdema. On July 18 full inversion of the uterus had taken place and the patient's temperature was normal. Slight œdema was still present in the right leg. The treatment consisted of rest, with the application of glycerine and ichthyol to the leg, which was kept warm and elevated. The patient was not to be allowed up until the clots were thoroughly organized. This might take several weeks and was necessary to avoid the risk of pulmonary embolism. It was pointed out that since the proteus bacillus was a variety of *Bacillus coli communis*, the pyelitis responded to the same treatment as did that caused by the latter organism.

Bronchitis and Pyrexia Before and During Labour: Parametritis.

Dr. Ludowici's last patient was a woman, aged thirty-six years. She was admitted to hospital on June 3, 1934. She had nine living children, whose ages ranged from nineteen years to fourteen months. Her last menstrual period occurred from August 20 to 23, 1933. An infant was born on July 9, 1934, after a normal labour. On the day before labour set in the patient's temperature was 38·3° C. (101° F.). The fever continued, chest signs which were present cleared up in a few days, and pelvic pain occurred on July 18. Vaginal examination revealed thickening on both sides of the uterus. The leucocyte count was over 20,000 per cubic millimetre. Operation was indicated and would be undertaken by incision behind

the cervix, in the mid-line, followed by exploration with the finger and drainage. The uterus was also to be washed out. The parametrial cavity was to be plugged with gauze. It was explained that occasionally severe oozing occurred from the edges of such wounds some hours after operation. This should be promptly controlled by suturing the wound and by leaving the gauze *in situ* for three days. The vagina should also be plugged with cotton wool soaked in lysol or cyllin, as in *placenta prævia*. These plugs formed a solid mass and effectively controlled the bleeding.

Diabetes in Pregnancy.

Dr. A. J. Gibson showed a *multipara*, aged forty-two years, who had nine children, six of whom were living. The infants had all been big, averaging at birth 5·4 kilograms (twelve pounds) in weight. Three years ago the patient became affected by diabetes and since that time had been treated at Sydney Hospital. She had not had any insulin, but was kept on a sugar-free diet alone. Since she began to suffer from diabetes she had had two miscarriages.

The patient was referred to the Women's Hospital on February 2, 1934, for termination of pregnancy, being then eight weeks pregnant. She remained in hospital for two weeks and then, as her urine contained neither sugar nor acetone and as this condition of affairs was brought about by dieting alone, it was decided that the pregnancy should not be terminated and that the patient was to report at the out-patient department every week. On June 5, 1934, the patient was readmitted to hospital, being then twenty-six weeks pregnant and having acetone in the urine. On a diet of 1,500 calories the acetone did not quite clear up, and nine days later the carbohydrates in the diet were increased to 122 grammes. The protein content of the diet was 68 grammes and the fat content 95 grammes, making a total of 1,600 calories with a glucose-fatty acid ratio of 1·5:1. After four days the urine became sugar-free and acetone-free and remained so for eighteen days. The patient was then allowed to get out of bed, and acetonuria reappeared. The diet was further increased to 1,700 calories, carbohydrates 140 grammes, protein 80 grammes and fats 90 grammes, giving a glucose-fatty acid ratio of 1·7:1. At first she lost weight, but at the time of the meeting was putting it on. Her diet had been made to include one and a half pints of milk per day and fresh fruit. Her fasting blood sugar was 106 milligrammes *per centum*, and after she took 50 grammes of glucose it rose to 168 milligrammes and remained at that level for two hours.

Dr. Gibson said that the case was one of mild diabetes and the important point was that with modern treatment diabetes was usually not an indication for induction of abortion. Most diabetics did not, for some unknown reason, become pregnant, and if they did, they frequently miscarried. (This patient had had two miscarriages.) The fœtus tended to be large, owing, it was said, to the excessive carbohydrate circulating in the blood, and hydramnios was a frequent accompaniment, the fluid containing sugar. With careful dieting and, if necessary, insulin, patients could be carried on, and their treatment during labour consisted in giving glucose and insulin liberally, as was done in preparation for an operation. It was stated that the fœtal pancreas produced insulin towards the latter half of pregnancy and aided in the absorption of carbohydrates. In regard to this point it was interesting to compare two blood sugar estimations, one at the eighth week and the other at the twenty-sixth week. These are set out in the following table.

Observation.	Eighth Week. (Milligrammes %.)	Twenty-Sixth Week. (Milligrammes %.)
Fasting blood sugar	140	106
½ hour after 50 grammes of glucose	168	168
1 hour after 50 grammes of glucose	241	168
1½ hours after 50 grammes of glucose	241	168
2 hours after 50 grammes of glucose	214	168

With regard to diet, they had followed the modern teaching of giving a liberal carbohydrate diet and were quite prepared to give insulin if necessary. The fresh fruit was practically an essential, as were also the one and a half pints of milk *per diem*.

Hospital care was almost essential for these cases, and one needed to have a pathological laboratory close at hand during labour to do urgent blood sugar estimations should the labour be unduly prolonged.

The conduct of the case from the obstetrical point of view did not vary from the normal case, except in regard to the anæsthetic, which should, if possible, be a gas and oxygen one; otherwise ether might have to be used. Anæsthesia should, of course, not be unduly prolonged if it could be avoided. On account of the large size of the fœtus sometimes a premature induction at labour was indicated or even a Cæsarean section, and as with all cases of diabetes the threat of coma was always close at hand.

The puerperium was to be carefully watched, particularly for infection of the uterus and for any trauma, because of the usual diabetic tendency to gangrenous processes and generalized lowered resistance to infection.

The clinical differential diagnosis from lactosuria depended, of course, on the symptoms of polyuria, polydypsia, wasting and pruritus and the presence of acetone and diacetic acid in the urine, all of which did not occur in a simple lactosuria.

Exophthalmic Goitre.

Dr. Gibson's second patient was a *primipara*, aged thirty years, who was admitted to hospital on July 22, 1933, when sixteen weeks pregnant. The patient had had an exophthalmic goitre for two years and had been under treatment at Sydney Hospital, where she had had rest, Lugol's iodine, and where her teeth and tonsils had been removed. She refused operative treatment.

Examination at the time of the patient's admission to the Women's Hospital revealed exophthalmos and tremor. Her heart was not enlarged and a basal systolic murmur was present. Several small fibroids were present in the uterus, and one pedunculated fibroid was present in the pelvis. Her pulse rate was in the vicinity of 120 on August 18, and when she was discharged from hospital to report to the out-patient department her pulse rate was in the vicinity of 90. It was decided that treatment for the goitre was to be continued and that the pregnancy should be neglected for the present.

On readmission to hospital on December 28, 1933, her general condition had improved greatly, the pulse rate being about 100. The fibroids could be felt on the uterus, and none were in the pelvis. She was then thirty-seven weeks pregnant. Labour commenced on January 5 and a thirty-eight weeks' living female infant was born. Labour lasted eight and a half hours, the pulse rate rising to 136 half an hour before the infant was born. The puerperium was complicated by pyelitis and a mild degree of putrid endometritis. The patient was discharged on February 3, 1934. At the time of the meeting the patient was undergoing a course of X ray treatment.

Dr. Gibson said that the main point was that exophthalmic goitre was not an indication for therapeutic abortion. Pregnant patients suffering from thyreotoxicosis might be divided into three groups: (i) those who were unaffected by pregnancy, (ii) those who were made worse by pregnancy, (iii) those who were improved by pregnancy. These groups were applicable only for the exophthalmic type. The toxic adenomatous type had well marked cardiac damage, it was not as common as exophthalmic goitre, and tended to occur after the child-bearing period. Consequently it was an extremely rare condition during pregnancy.

This case fell into the mild type that was improved by pregnancy and got worse afterwards. As in all mild cases during pregnancy the patient was improved by small doses of Lugol's iodine and rest in bed.

The essential point in the treatment of the more toxic cases was to treat the goitre, neglecting the pregnancy for the time being. Should the goitre be getting worse, then partial thyreoidectomy or X ray therapy was indicated.

The relationship of the endocrine glands to the reproductive system was so closely bound up that any disturbance of the former commonly resulted in sterility, and, should patients become pregnant, they tended to miscarry. The combination of amenorrhœa and thyreotoxicosis was well known, and recent work directed attention to the fact that these patients often had dystocia during their labour.

The treatment during labour consisted of careful watching and the use of sedatives during a long first stage and the timely application of forceps during the second stage. Cæsarean section was fraught with danger. These patients stood operation very badly and operation was almost certainly contraindicated.

Contracted Pelvis and Extensive Scarring of the Abdomen: Cæsarean Section.

Dr. Gibson's last patient was a woman, aged twenty-six years, a *primipara*, who was admitted to hospital in November, 1932, in the thirty-seventh week of her pregnancy. The pelvic measurements were as follows: Interspinous, 22·5 centimetres (nine inches); intercristal, 26·25 centimetres (ten and a half inches); external conjugate, 17·5 centimetres (seven inches). The patient's abdomen was extensively scarred as a result of her being scalded in childhood. Labour commenced on December 2 at about twelve o'clock midnight. The membranes ruptured at 4 a.m., the head was still high, and no attempt at engagement had been made at 9 a.m. The fœtal heart sounds were present. Cæsarean section was performed.

Dr. Gibson said that the case was interesting because the patient had been shown at a previous Branch meeting in 1932, and the suggestion had been put forward that owing to the scar tissue the abdominal wound caused by Cæsarean section might not heal rapidly. This had not been borne out by results. At the time of the meeting the patient was between three and four months pregnant and would undergo a second Cæsarean section at term.

The Aschheim-Zondek Test.

Dr. C. Gammie reported four cases illustrating the utility of the Aschheim-Zondek test.

In the first case a married woman, aged twenty-two years, gave a history of having had a child seven months previously and had had a period of amenorrhœa for seven weeks. She was admitted to hospital for diagnosis; it was thought that either pregnancy or fibroid tumours of the uterus might be present.

An Aschheim-Zondek test was done with urine collected on July 5, and both mice showed typical changes in the ovaries, namely, enlargement, development of hæmorrhagic corpuscles and *corpora lutea*.

In the second case a married woman, aged nineteen years, gave a history of having had eclampsia with her first pregnancy fifteen months previously. The child was stillborn. She was admitted to hospital with a systolic blood pressure of 150 and a diastolic pressure of 90 millimetres of mercury. The urine contained a heavy cloud of albumin. The patient also gave a history of two months' amenorrhœa.

An Aschheim-Zondek test was done with urine collected on July 11, and both mice showed the development of numerous hæmorrhagic corpuscles.

With treatment the systolic blood pressure had dropped to 90 and the diastolic pressure to 50 millimetres of mercury. The patient had been discharged with instructions to report at the out-patients' department at regular intervals.

In the third case a married woman, aged forty-eight years, gave a history of having had eight children, the last twelve years ago. She had an attack of pyelitis in March, 1934, and had irregular vaginal bleeding at the end of January, with amenorrhœa since then.

Both mice used for the test, which was performed with urine collected on July 13, showed distension and some engorgement of the uterine cornua, but no changes in the ovaries—the result of the test was negative.

In the fourth case a married woman, aged thirty-eight years, was admitted to hospital with a provisional diagnosis of *hyperemesis gravidarum*. The uterus was enlarged but somewhat unusual in shape, and felt "doughy".

An Aschheim-Zondek test was performed with urine collected on June 14. This test gave a positive result. On June 30 the patient delivered herself of a hydatidiform mole. An Aschheim-Zondek test was done with urine collected on July 9, to determine whether the result of the test would remain positive for a prolonged period after the separation of the mole, and in reference to future treatment and the development of chorion-epithelioma.

One mouse showed tremendous dilatation of the uterine cornua, but no changes in the ovaries; the other mouse showed no changes. A further test was to be done with urine collected on July 17, to insure that no further development had occurred.

Toxic Hyperemesis Occurring Late in Pregnancy.

Dr. R. M. Bowman reported the histories of two patients who had suffered from toxic hyperemesis occurring late in pregnancy.

The first patient was a *primipara*, aged twenty-five years. She was admitted to hospital on April 29, 1934, being eight months pregnant. She gave a history of intermittent vomiting for two weeks. Her temperature was normal, her pulse rate was 100, and her general condition was good. No jaundice was present. The urine was acid and contained acetone, but no bile or albumin. Treatment consisted in lavage of the bowel and in the rectal injection of saline solution and glucose. The acetone disappeared from the urine. On May 2, 1934, the patient was not so well and she received an intravenous injection of saline solution and glucose. On May 3 the fœtal heart could not be heard. Calcium gluconate was administered and it was decided to induce labour on the following day. On May 4 the patient came into labour early and at 10 p.m. a dead fœtus was born. The patient's pulse was soft and its rate was 116 in the minute. The temperature was subnormal. At 11 p.m. an intravenous injection of 500 cubic centimetres of saline solution with 7% of glucose was given. The pulse improved.

During the next four days the patient lay quietly; no vomiting occurred; the tongue was moist and clear. The patient was not dehydrated. She was passing from twelve to twenty ounces of urine a day. The urine was acid and contained neither albumin nor acetone. The patient died on May 9 and no *post mortem* examination was allowed.

Dr. Bowman's second patient was a woman, aged twenty-three years, who had had one child. She was admitted to hospital on May 27, 1934, in the eighth month of her pregnancy. She gave a history of vomiting for seven days, and in the twenty-four hours before her admission to hospital the vomitus had resembled coffee grounds. The patient's general condition was very unsatisfactory. No jaundice was present, but air hunger was noted. The urine was acid and contained a considerable quantity of acetone; no bile was present, but albuminuria ("one-sixth") was present. The patient died thirteen hours after admission.

Treatment in this case consisted in the administration of 20% glucose and of 10 units of insulin in 200 cubic centimetres of saline solution. Adrenaline and calcium gluconate were also given.

Hydramnios, Twins and Acute Eclampsia.

Dr. R. B. Stevenson reported the history of a patient, aged eighteen years, who was admitted to hospital on April 18, 1934, the date of whose confinement was expected to be June 20, and who died on June 17. At the time of the patient's admission to hospital the abdomen was tense and very large and the fœtal parts could not be palpated. X ray examination revealed a twin pregnancy, both fœtuses presenting by the breech. A healing abscess of the breast was present. The patient was suffering from a secondary anæmia. The Wassermann test gave no reaction and the urine was normal. The systolic blood pressure was 110 and the diastolic pressure 60 millimetres of mercury. The next six weeks in the patient's history were uneventful and the blood picture returned to normal.

On May 21, 1934, the systolic blood pressure was 108 and the diastolic pressure 60 millimetres of mercury. The urine was normal.

On June 12, 1934, the systolic blood pressure was 134 and the diastolic pressure 80 millimetres of mercury. The urine was normal. The patient had slight œdema of the feet.

On June 16, 1934, the systolic blood pressure was 125 and the diastolic pressure 78 millimetres of mercury. The urine was normal. Slight œdema of the feet was present. At 6 p.m. on the same day a faint cloud of albumin was discovered in the urine.

On June 17, 1934, the patient had a fit at 4.30 a.m. The systolic blood pressure was 110 and the diastolic pressure 90 millimetres of mercury. The urine contained a faint cloud of albumin. At 4.45 a.m. the patient had a second fit and became cyanosed. At 5.5 a.m. she had a third fit, and at 5.25 a.m. a fourth. At 6.30 a.m. the patient died from exhaustion. The *post mortem* findings included acute congestion of the heart, lungs, liver and kidneys.

It was pointed out that this case illustrated the increased tendency to toxæmia in over-distension of the uterus. Of interest also were the acute onset of the condition without warning, the low blood pressure and the small quantity of albumin that was found in the urine.

Anæmia of Pregnancy of Anomalous Type.

Dr. H. C. E. Donovan showed a woman, aged twenty-nine years, who was admitted to hospital on January 22, 1934. She had had no previous illness of any importance. She had five children alive, their ages varying between ten years and sixteen months. Her last menstrual period was thought to have occurred in June, 1933. She complained of weakness and lack of appetite, of what she called ulcers in the throat and of loss of weight.

On examination the patient was emaciated and pale and had atrophic glossitis. The uterus was the size of a seven and a half months pregnancy; the erythrocytes numbered 1,990,000 per cubic millimetre, the hæmoglobin value was 51%, and the colour index 1·3. There was some variation in the size and shape of the red cells, but no nucleated red cells were found.

On January 30, 1934, the erythrocytes numbered 1,700,000 per cubic millimetre, the hæmoglobin value was 40% and the colour index 1·18. The leucocyte count was 8,750 per cubic millimetre. There was slight variation in the size and shape of the cells, with a few doubtful macrocytes. One normoblast was seen.

On February 2, 1934, a blood transfusion was given. The patient had an attack of diarrhœa and a rigor two hours after receiving the transfusion.

On February 5, 1934, the red cells numbered 1,920,000 per cubic millimetre, the hæmoglobin value was 36% and the colour index 0·95. The leucocytes numbered 1,625 per cubic millimetre. Three megaloblasts were seen, while 100 leucocytes were counted. Macrocytes were present.

On February 11, 1934, a normal infant was born. On the following day the patient's erythrocytes numbered 1,800,000 per cubic millimetre, the hæmoglobin value was 31% and the colour index 0·88. The leucocytes numbered 5,100 per cubic millimetre. Only slight variation in the size and shape of the cells was found.

On February 16, 1934, a blood transfusion was given. The patient's temperature rose to 40·5° C. (105° F.) thirty-five minutes after the transfusion was given.

On February 19, 1934, the red cells numbered 1,735,000 per cubic millimetre, the hæmoglobin value was 40% and the colour index 1·15. The leucocytes numbered 4,425 per cubic millimetre. A slight variation in the size and shape of the cells was found. Subsequently the blood picture remained the same, except that macrocytes were found when a count was done on March 5, 1934.

On March 9, 1934, a blood transfusion was given. A test meal revealed decreased gastric acidity.

On March 12, 1934, the erythrocytes numbered 2,200,000 per cubic millimetre, the hæmoglobin value was 50% and the colour index 1·15. The leucocytes numbered 5,350 per cubic millimetre.

On March 19, 1934, the erythrocytes numbered 2,660,000 per cubic millimetre, the hæmoglobin value was 38% and the colour index 0·9. The leucocytes numbered 9,875 per cubic millimetre. In this count and in the previous count variation in size and shape of the red cells was found, though no nucleated red cells were seen. Macrocytes were found in the blood on March 12.

Treatment consisted in the administration of iron, in the intramuscular injection of extract of liver, in the use of "Ventriculin" and acids. The diet was a full diet and contained marmite. The patient finally went home at her own risk; her infant was healthy and was putting on weight.

Repeated Albuminuria with Succeeding Pregnancy.

Dr. T. Dixon Hughes showed a patient who suffered from albuminuria in each of her pregnancies. The patient gave no history of illness before her first confinement. Her first pregnancy occurred in 1924 and was complicated by eclampsia at term. Her second pregnancy occurred in 1925; albuminuria was present and labour was induced. Her third pregnancy resulted in a miscarriage at six and a half months. Her fourth pregnancy, in 1927, resulted in a miscarriage at five months. Her fifth pregnancy occurred in 1930; albuminuria occurred and labour was induced at term. Her sixth pregnancy occurred in 1932; her systolic blood pressure was 170 millimetres of mercury, and labour was induced surgically. Her seventh pregnancy occurred in 1934 and ended in a miscarriage at five months. Dr. Dixon Hughes said that in this case the question of sterilizing the patient should be considered.

Chronic Nephritis.

Dr. Dixon Hughes also showed two patients who were suffering from chronic nephritis.

The first patient was thirty-five years of age. She had two living children and had had three miscarriages. In her case the chronic nephritis was accentuated by pregnancy. Labour had to be induced by surgical means and the patient was delivered of a macerated fœtus.

The other patient was a woman of forty-one years, whose nephritis was complicated by hæmaturia. She had two children alive, aged ten and seven years, and had had one miscarriage two years ago. Labour was induced by the Krause method and a macerated fœtus was expelled. The patient's systolic blood pressure was 230 and her diastolic pressure 160 millimetres of mercury. Examination of the fundi revealed papillitis with exudate and hæmorrhages in both eyes. The blood urea was 29 milligrammes *per centum*.

Adherent Placenta and Severe Shock.

Dr. J. G. W. Hill showed a patient, aged twenty-five years, who was admitted to hospital on June 12, 1934. This was the patient's first pregnancy and she had had no other serious illness. At the time of her admission to hospital the patient gave a history of pain in the back and of diarrhœa for two days. No œdema was present. The albumin in the urine was estimated at "a quarter". The systolic blood pressure was 138 and the diastolic pressure 78 millimetres of mercury. Coliform pyelitis was present. The patient's condition gradually improved. Delivery was normal, but this was followed by severe collapse. The placenta was adherent and required manual removal. The patient's condition subsequently improved.

MEDICO-POLITICAL.

A special meeting of the Tasmanian Branch of the British Medical Association was held at the Tasmanian Museum, Hobart, on August 21, 1934, Dr. D. H. E. Lines in the chair.

The Tasmanian Anti-Cancer Fund.

The Honorary Secretary (Dr. J. H. B. Walch) read the following motion, for the consideration of which the meeting had been called.

> That the sum of one hundred guineas be donated by the Branch to the Tasmanian Anti-Cancer Fund.

Dr. E. A. Rogers asked for a ruling from the chair as to whether the motion was in conflict with the constitution of the Association. The Chairman ruled that it was not.

Dr. E. A. Rogers then formally moved and Dr. J. Stoddart Barr seconded the motion, notice of which had been previously given by them.

Dr. A. W. Shugg moved as an amendment that the Branch Council be requested to reconsider its recommendation that a sum of money should be donated by the Branch to the Anti-Cancer Fund and that it endeavour to raise one hundred pounds or more by individual subscriptions from the medical men of southern Tasmania.

In seconding the amendment, Dr. F. W. Fay said that he regarded the Branch funds in the light of trust funds of which the members were trustees, and he hoped that some time in the future those funds would be used to purchase a home for the Branch. He did not think that they should be used in the manner suggested in the motion.

Dr. C. N. Atkins supported the amendment, which was subsequently carried in place of the original motion.

In anticipation of the Council's action a subscription list was immediately opened and the sum of thirty-five pounds was contributed by the members present.

NOMINATIONS AND ELECTIONS.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Geikie, Gertrude Cameron, M.B., B.S., 1927 (Univ. Sydney), Royal Alexandra Hospital for Children, Camperdown.

Selby, Clive Herbert, M.B., B.S., 1933 (Univ. Sydney), Marley, Werona Avenue, Gordon.

Swinburn, Robert, M.B., B.S., 1931 (Univ. Sydney), 3, Captain Piper Road, Vaucluse.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A meeting of the Medical Sciences Club of South Australia was held at the University of Adelaide on July 6, 1934.

Phosphorus Deficiency in Pastures.

Mr. R. H. Marston briefly discussed the maladies of grazing stock that are associated with phosphorus deficiency of the pastures, and drew attention to the human diseases—hunger osteopathy, osteomalacia and rickets—which became endemic in times of acute nutritional stress. While grazing animals usually suffered from phosphorus deficiency, the human dietary was such that a shortage of calcium was more likely to occur than a lack of phosphate. Attention was drawn to the effects of chronic fluorine poisoning which was produced experimentally. The extensive exostoses of the bones and dystrophy of the permanent teeth might be induced in grazing stock which were receiving large amounts of certain mineral rock phosphates in the form of supplements. The more recently formed phosphatic deposits had very much less fluorine in them than those of great geological age. It was doubtful whether fluorine was a normal constituent of bones or teeth. Normal bone contains rather less than 0·1% of fluorine, while very ancient fossil bones might contain over thirty times this amount. This increase was due to double decomposition of the hydroxy apatite of the mineralized portion with fluorine-bearing waters, fluorapatite being formed.

Bile Salts and the Contractility of the Gut.

Professor C. S. Hicks reported the results of some experiments which demonstrated that bile salts in the circulating blood diminished the contractile activity of the gut, while in the lumen of the gut they increased activity. These experiments illustrate the fundamental cause of constipation in jaundice.

A New Alkaloid.

He also demonstrated a specimen of a new alkaloid isolated from the *Duboisia hopwoodii*, the composition of which was not yet ascertained but the physical and pharmacological characters of which proved it to be an entirely new one and not, as formerly believed, to be nicotine.

Professor Hicks stated that experimental work related to both his communications was in progress.

The Royal Australasian College of Surgeons.

BOARD OF CENSORS' MEETINGS.

The revised system of admission to fellowship of the Royal Australasian College of Surgeons, which entails an examination by a board of censors, was introduced at the beginning of this year.

The Australian Board of Censors has conducted examinations in Melbourne and Adelaide in February, and in Sydney in September, 1934. The results are as follow:

Fellowships in Surgery:

Number of candidates	19
Approved	11
Deferred	2
Rejected	6

Fellowships in Ophthalmology:

Number of candidates	6
Approved	4
Deferred	2

Fellowships in Laryngo-Otology:

Number of candidates	6
Approved	2
Deferred	3
Rejected	1

The New Zealand Board of Censors has conducted an examination at Dunedin in September, 1934. The results are as follows:

Fellowships in Surgery:

Number of candidates	5
Approved	4
Deferred	1

Fellowship in Ophthalmology:

Number of candidates	1
Deferred	1

The names of the successful Australian candidates are as follow:

Fellowships in Surgery:

Buchanan, August Lyle.
Goulston, Eric Hyman.
King, Thomas.
Mackenzie, John Forbes Cock.[1]
Malcolm, Robert James Wherry.
Mayo, John Christian.
McKay, Douglas Gordon.
Melville, Charles Bernays.
Mortensen, Henry Newman.
Phillips, Henry Anthony.
Renou, Cecil Ashley Marshal.

[1] Exempted by the Council from the senior surgical degree qualification.

Fellowships in Ophthalmology:

Anderson, Esmé Vivienne.
Black, Geoffrey Howard Barham.
Box, William Mitchell.
Duncan, William John Lawrence.

Fellowships in Laryngo-Otology:

Amies, Arthur Barton Pilgrim.
Cantor, Cecil Nathaniel Love.

These candidates were subsequently admitted to fellowship of the College by the Council.

Candidates whose applications have been rejected must reapply, on the appropriate form, to the Censor-in-Chief, for permission to appear before a future meeting.

Candidates who have been deferred may reappear before any subsequent meeting of the Board of Censors, providing that they have notified the Censor-in-Chief of their intention before entries close for the appropriate meeting.

The next meeting of the Board of Censors will be held in Melbourne at the end of February, 1935. Candidates who desire to present themselves at this meeting should apply to the Censor-in-Chief for permission to do so, on or before December 31, 1934. The appropriate forms are available at the head office of the College, 6, Collins Street, Melbourne, and at the offices of the various State Secretaries.

Every candidate must possess a senior surgical qualification, approved by the Council, unless he be specially exempted by the Council from the terms of this regulation. Under the regulations such exemptions may not exceed three in any one year and can only be granted to candidates who have been in practice for more than twenty years.

Correspondence.

EARLY DIAGNOSIS OF APPENDICITIS.

SIR: In your issue of September 8 there is an article by Dr. Tange which calls for comment.

Firstly, it is an example of what can be done by a busy practitioner and how to do it.

Dr. Tange has given many men with far greater facilities a paper which seems to me a model of scientific collection of facts and their coordination and analysis. His paper is brief, to the point, and his conclusions are clearly expressed. He has, and this is the special point that interests me, touched on the value attachable to the leucocyte count, and his paper helps to convert certain rather loosely worded opinions that have appeared from time to time belittling "laboratory tests", especially the leucocyte count.

He has emphasized that such a test must be taken in relation to all other ascertainable facts of the case and then may be very useful. He has omitted one point, however, which is very important in connexion with all such tests: Who has made the count?

Though this question does not come into the special object of his communication, and Dr. Tange has demonstrated his own adequacy of technique and has not relied on others for his tests, it often seriously affects conclusions made by those relying on one or other "pathological laboratory", where the count may or may not be made by a person qualified to do the work.

Personal experience has shown me that these tests may, in certain laboratories, be of very little value, and simply because, for some reason, they are regarded as "simple" and capable of being carried out by lay (or medical) persons who have not the adequate training or experience to be reliable.

Without going into detail, I may mention the lay "pathologist" who did not recognize an eosinophile unless it showed bright pink staining of the granules and for months had been using a preparation which, as frequently happens, stained these elements purplish brown. This person was quite unaware of the importance of the nucleus shape and the definite margination of the granules.

There was another, and this time, I regret to say, a medical person, who was embarking on a "pathologist's" career in a public institution, who was unable to recognize a basophile and was more than doubtful of the differences in the leucocyte tube and that for red cells.

So, while congratulating Dr. Tange on his interesting and useful communication, let me urge upon the readers that the time is more than ripe for the more adequate recognition of the special training required before one can become a pathologist, for the proper demarcation of the work of all lay assistants, for the registration, training and examination of the latter, and especially before the thin edge of the wedge has penetrated too far for the restriction of the term "pathologist" to a specially trained medical man or woman.

Yours, etc.,

BURTON BRADLEY.

69, Woniora Road,
Hurstville,
New South Wales,
September 20, 1934.

SYMPATHETIC RAMISECTION.

SIR: Dr. Norman Royle has called my attention to the fact that in the report on sympathetic ramisection (March 17, 1934) it was stated that: "The chief purpose of the work of the subcommittee was the examination of the clinical results of ramisection as originally created by Dr. Royle and suggested by the late Professor Hunter." I have the confirmation by Sir Richard Stawell of my impression that the committee intended to substitute "supported" for "suggested" in the final draft of the report, and I regret that this alteration was not in fact made, thereby avoiding the implication that Professor Hunter suggested the performance of these operations.

Yours, etc.,

F. WOOD JONES.

The University of Melbourne,
Melbourne,
September 24, 1934.

Obituary.

PERCY DENTON FETHERS.

WE regret to announce the death of Dr. Percy Denton Fethers, which occurred on September 22, 1934, at Melbourne, Victoria.

JOHN LOFTUS CUPPAIDGE.

WE regret to announce the death of Dr. John Loftus Cuppaidge, which occurred on September 23, 1934, at Brisbane, Queensland.

NOTICE.

THE first annual golf championship of the Victorian Branch of the British Medical Association was played on Thursday, September 27, 1934, on the Royal Melbourne Golf Links. The match was played in a sixty-mile gale with almost horizontal rain, making accuracy impossible. There were 100 entries and 92 starters. Dr. R. P. Booth, with an 87, was the winner of the cup presented by the President, Dr. Gerald Weigall. Concurrently with this match a handicap event was held, and the cup presented by Dr. Roseby was won by Dr. L. W. Johnston with a net score of 73.

The following were the leading scores:

Championship: R. P. Booth, 87; W. R. Groves, 89; H. G. Furnell, 90; A. J. W. Ahern, M. H. Mailer, 92; Westmore Stephens, E. Downie, W. K. Davenport, J. Gray, H. McLorinan, 93; H. R. Hyett, 94; L. Doyle, V. Hurley, 96.

Singles Handicap: L. W. Johnston (24), 73; W. A. Hailes (16), F. A. Newman (24), F. E. Keane (20), 82; F. May (14), H. McLorinan (10), 83; A. F. MacInnes (14), G. R. Davidson (13), A. J. W. Ahern (8), 84; C. Watson (16), W. R. Groves (4), H. G. Furnell (5), L. Speirs (10), H. Watson (8), J. Kennedy (9), 85.

Corrigendum.

In the advertisement on page xv of this issue for Heparidine Distributors, Pty., Ltd., under the heading "Cost to Patient", we advertise "10/- per 400 tablets". This should read "10/6 per 400 tablets". "Also available in powder form" should be deleted and "Chemists only—P.A.T.A." inserted.

Books Received.

HUMAN SEX ANATOMY, by R. L. Dickinson, M.D., F.A.C.S.; 1933. Baltimore: The Williams and Wilkins Company; Australia: Angus and Robertson. Royal 4to., pp. 158. Price: 63s. net.

GONOCOCCAL INFECTION: RECENT ADVANCES IN PATHOLOGY, DIAGNOSIS AND TREATMENT, by R. V. Storer, M.R.C.S., L.R.C.P., with foreword by K. M. Walker, M.A., F.R.C.S.; 1934. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 101. Price: 7s. 6d. net.

YOUR LONG-SUFFERING STOMACH, by A. F. Kraetzer, M.D., with illustrations by F. G. Cooper; 1934. London: George Allen and Unwin, Limited. Crown 8vo., pp. 126, with illustrations. Price: 3s. 6d. net.

ESSENTIALS OF HISTOLOGY, DESCRIPTIVE AND PRACTICAL, FOR THE USE OF STUDENTS, by E. Sharpey-Schafer, F.R.S.; Thirteenth Edition, edited by H. M. Carleton, M.A., B.Sc., D.Phil.; 1934. London: Longmans, Green and Company. Demy 8vo., pp. 628, with illustrations. Price: 15s. net.

Diary for the Month.

Oct. 9.—Tasmanian Branch, B.M.A.: Branch.
Oct. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Oct. 12.—Queensland Branch, B.M.A.: Council.
Oct. 16.—Tasmanian Branch, B.M.A.: Council.
Oct. 16.—New South Wales Branch, B.M.A.: Ethics Committee.
Oct. 17.—Western Australian Branch, B.M.A.: Branch.
Oct. 17.—Victorian Branch, B.M.A.: Clinical Meeting.
Oct. 18.—New South Wales Branch, B.M.A.: Clinical Meeting.
Oct. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Oct. 24.—Victorian Branch, B.M.A.: Council.
Oct. 25.—New South Wales Branch, B.M.A.: Branch.
Oct. 25.—South Australian Branch, B.M.A.: Branch.
Oct. 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xviii, xix.

Austin Hospital for Cancer and Chronic Diseases, Heidelberg, Victoria: Resident Medical Officer.

Children's Hospital (Incorporated), Perth, Western Australia: Junior Resident Medical Officers.

Launceston Public Hospital, Launceston, Tasmania: Resident Medical Officers.

Public Service Commissioner, Adelaide, South Australia: Registrar.

The Eastern Suburbs Hospital, Sydney, New South Wales: Honorary Officers.

The University of Sydney, New South Wales: Pathologist.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square London, W.C.1

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
South Australian: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

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Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.